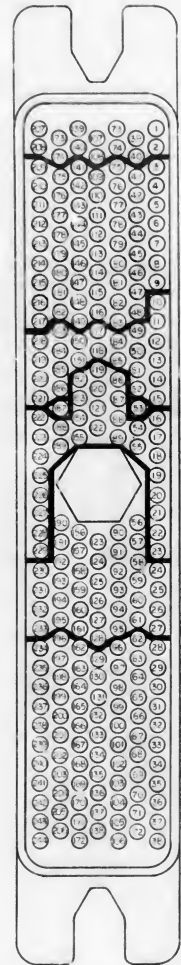


| | |
|-----------------|---|
| | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm |
| | DO NOT SCALE THIS DRAWING MATERIAL _____ |
| | HEAT TREATMENT _____ |
| NEXT ASSY _____ | USED ON _____ |
| ANALYST _____ | FINAL FINISH _____ |

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| REVISIONS 07643 | | | |
|-----------------|-------------|------|----------|
| BY | DESCRIPTION | DATE | APPROVAL |



CABLE GROUP VI

| | | | | | | |
|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 1 NOT AVAILABLE FOR USE | 39 239 | 73 NOT AVAILABLE FOR USE | 107 245 | 139 NOT AVAILABLE FOR USE | 173 251 | 207 NOT AVAILABLE FOR USE |
| 2 NOT AVAILABLE FOR USE | 40 243 | 74 | 108 241 | 140 | 174 240 | 208 |
| 3 211 | 41 219 SIG | 75 212 | 109 217 SIG | 141 213 | 175 215 SIG | 209 247 |
| 4 270 SIG | 42 219 RET | 76 218 SIG | 110 217 RET | 142 218 SIG | 176 215 RET | 210 214 SIG |
| 5 220 RET | 43 226 SIG | 77 218 RET | 111 224 SIG | 143 218 RET | 177 222 SIG | 211 214 RET |
| 6 227 SIG | 44 226 RET | 78 225 SIG | 112 224 RET | 144 223 SIG | 178 222 RET | 212 221 SIG |
| 7 227 RET | 45 233 SIG | 79 225 RET | 113 231 SIG | 145 223 RET | 179 229 SIG | 213 221 RET |
| 8 234 SIG | 46 233 RET | 80 232 SIG | 114 231 RET | 146 230 SIG | 180 229 RET | 214 228 SIG |
| 9 234 RET | 47 244 SIG | 81 232 RET | 115 238 SIG | 147 230 RET | 181 236 SIG | 215 228 RET |
| 10 248 | 48 244 RET | 82 242 SIG | 116 238 RET | 148 237 SIG | 182 236 RET | 216 235 SIG |
| 11 249 | 49 206 SIG | 83 242 RET | 117 204 SIG | 149 237 RET | 183 202 SIG | 217 237 RET |
| 12 | 50 206 RET | 84 205 SIG | 118 204 RET | 150 203 SIG | 184 202 RET | 218 201 SIG |
| 13 | 51 246 SIG | 85 205 RET | 119 | 151 203 RET | 185 210 SIG | 219 201 RET |
| 14 | 52 246 RET | 86 | 120 | 152 | 186 210 RET | 220 208 SIG |
| 15 | 53 | 87 | 121 | 153 | 187 250 | 221 208 RET |
| 16 54 SIG | 54 | 88 | 122 | 154 | 188 | 222 |
| 17 | 55 | 89 | | 155 | 189 | 223 |
| 18 54 RET | | | | | | 224 1 SIG |
| 19 | | | | | | 225 NOT AVAILABLE FOR USE |
| 20 | | | | | | 226 1 RET |
| 21 | | | | | | 227 |
| 22 | 56 | 90 17 SIG | 123 24 SIG | 156 | 190 14 SIG | 228 |
| 23 | 57 | 91 17 RET | 124 24 RET | 157 | 191 14 RET | 229 |
| 24 | 58 | 92 26 SIG | 125 25 SIG | 158 | 192 15 SIG | 230 |
| 25 | 59 | 93 | 126 25 RET | 159 | 193 15 RET | 231 |
| 26 | 60 | 94 11 SIG | 127 | 160 | 194 16 SIG | 232 |
| 27 | 61 | 95 11 RET | 128 | 161 | 195 16 RET | 233 |
| 28 ERROR DETECT LIGHT | 62 OVOC SP CRAFT (26 RET) | 96 GIMBAL LOCK LIGHT | 129 | 162 | 196 | 234 |
| 29 | 63 IMU TEMP LIGHT | 97 MIN IMPULSE + YAW | 130 MIN IMPULSE - YAW | 163 MIN IMPULSE + PITCH | 197 MIN IMPULSE - PITCH | 235 |
| 30 | 64 | 98 MIN IMPULSE - YAW | 131 MIN IMPULSE + ROLL | 164 MIN IMPULSE - ROLL | 198 MIN IMPULSE PITCH | 236 |
| 31 ROLL ERROR OFFSET LO | 65 | 99 MIN IMPULSE TOG SW | 132 MIN IMPULSE ROLL RET | 165 MIN IMPULSE ROLL | 199 COS ANG 1X HI(S3) | 237 |
| 32 ROLL ERROR BODY HI | 66 ROLL ERROR OFFSET HI | 100 MIN IMPULSE ENABLE | 133 | 166 SIN ANG 1X LO(S2) | 200 COS ANG 1X LO(S1) | 238 |
| 33 YAW ERROR BODY HI | 67 ROLL ERROR SHLD | 101 S/C WARN LIGHT | 134 +78 VDC SPACECRAFT | 167 SIN ANG 1X HI(S4) | 201 COS ANG 1X HI(S3) | 239 |
| 34 YAW ERROR SHLD | 68 YAW ERROR OFFSET HI | 102 S/C CAUT LIGHT | 135 | 168 SIN ANG 1X LO(S2) | 202 COS ANG 1X LO(S1) | 240 |
| 35 PITCH ERROR LO | 69 YAW ERROR BODY LO | 103 LOCK COU RELAY CONT | 136 IMU MODE RELAY COMM | 169 SIN ANG 1X HI(S4) | 203 COS ANG 1X LO(S1) | 241 |
| 36 PITCH ERROR HI | 70 PITCH ERROR SHLD | 104 FINE ALIGN RELAY CONT | 137 NOT AVAILABLE FOR USE | 170 SIN ANG 1X LO(S2) | 204 COS ANG 1X HI(S3) | 242 IMU 28V ADCPS LO |
| 37 | 71 NOT AVAILABLE FOR USE | 105 | 138 | 171 SIN ANG 1X HI(S4) | 205 NOT AVAILABLE FOR USE | 243 IMU 28V ADCPS HI |
| 38 NOT AVAILABLE FOR USE | 72 | 106 NOT AVAILABLE FOR USE | | 172 NOT AVAILABLE FOR USE | 206 | 244 NOT AVAILABLE FOR USE |

CABLE GROUP I NOT SHIELDED

CABLE GROUP II SHIELDED

CABLE GROUP III SHIELDED

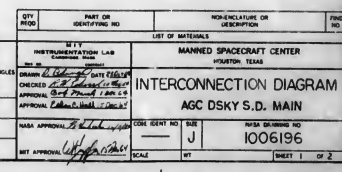
CABLE GROUP IV NOT SHIELDED

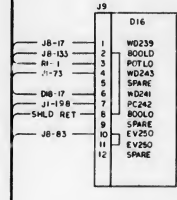
CABLE GROUP V SHIELDED

MALE RECEPTACLE
CONTACT SIDE
NORMAL POLARIZATION

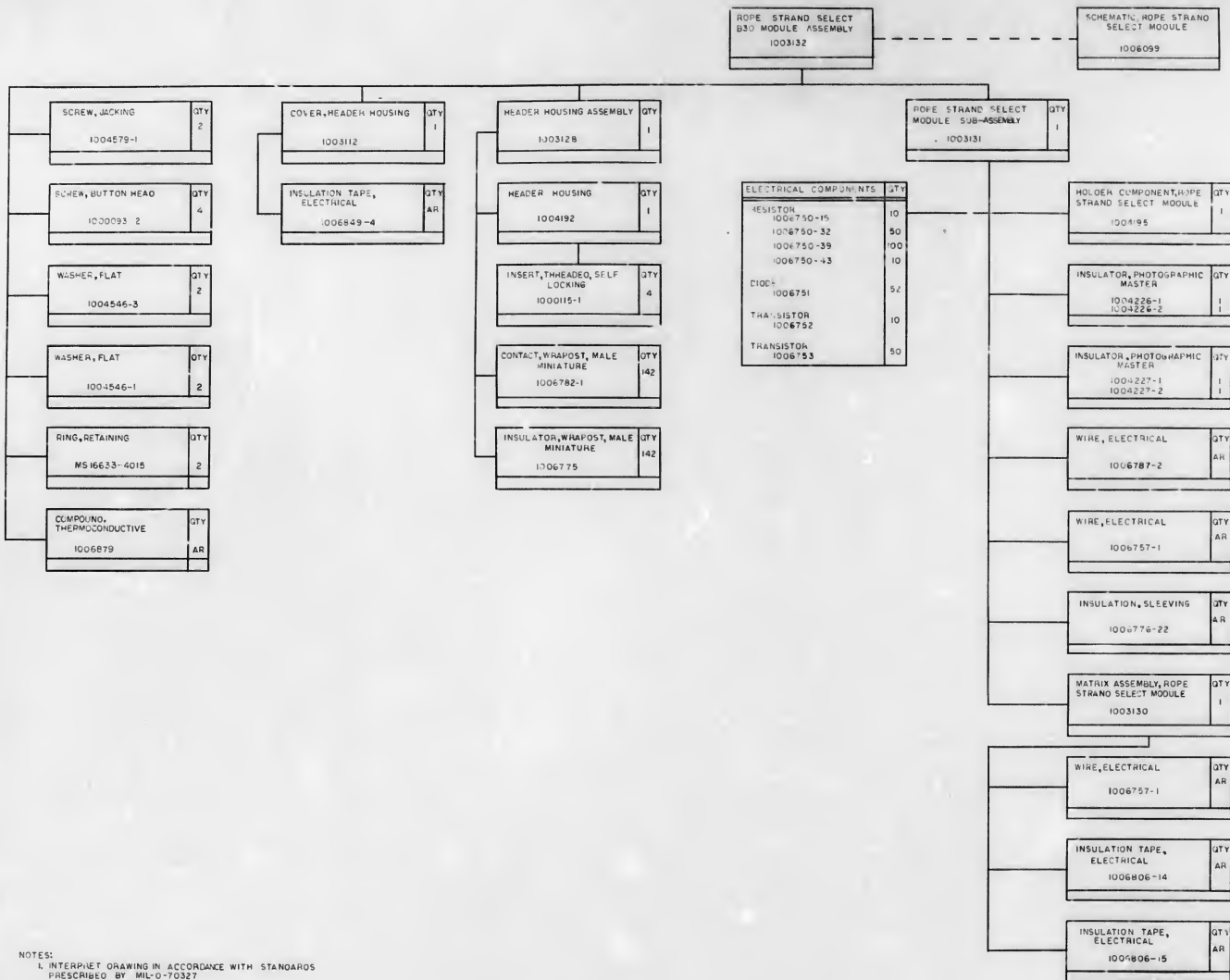
NOTES
1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED
BY MIL-D-70327

| | | | |
|---|----------------------------|----------------------------------|---|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND NO. |
| LIST OF MATERIALS | | | |
| MILITARY INSTRUMENTATION LAB CANNONVILLE, MISSOURI DRAWN BY <i>R. B. Bessie</i> , DATE <i>8 MAR 68</i> CHECKED BY <i>D. B. Bessie</i> , DATE <i>21 MAR 68</i> APPROVAL <i>David B. Bessie</i> APPROVAL <i>Edna C. Bessie</i> | | | |
| MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | | |
| SIGNAL PIN ASSIGNMENT 05ASP3 CONNECTOR (G&N TO G/M) | | | |
| HEAT TREATMENT | | NASA APPROVAL <i>W. H. H. H.</i> | CODE IDENT NO. <i>D</i> |
| FINAL FINISH | | MIT APPROVAL <i>W. H. H. H.</i> | NASA DRAWING NO. <i>1006182</i> |
| APPLICATION | | MIT APPROVAL <i>W. H. H. H.</i> | SCALE <i>NONE</i> WT <i>1</i> OF <i>1</i> |



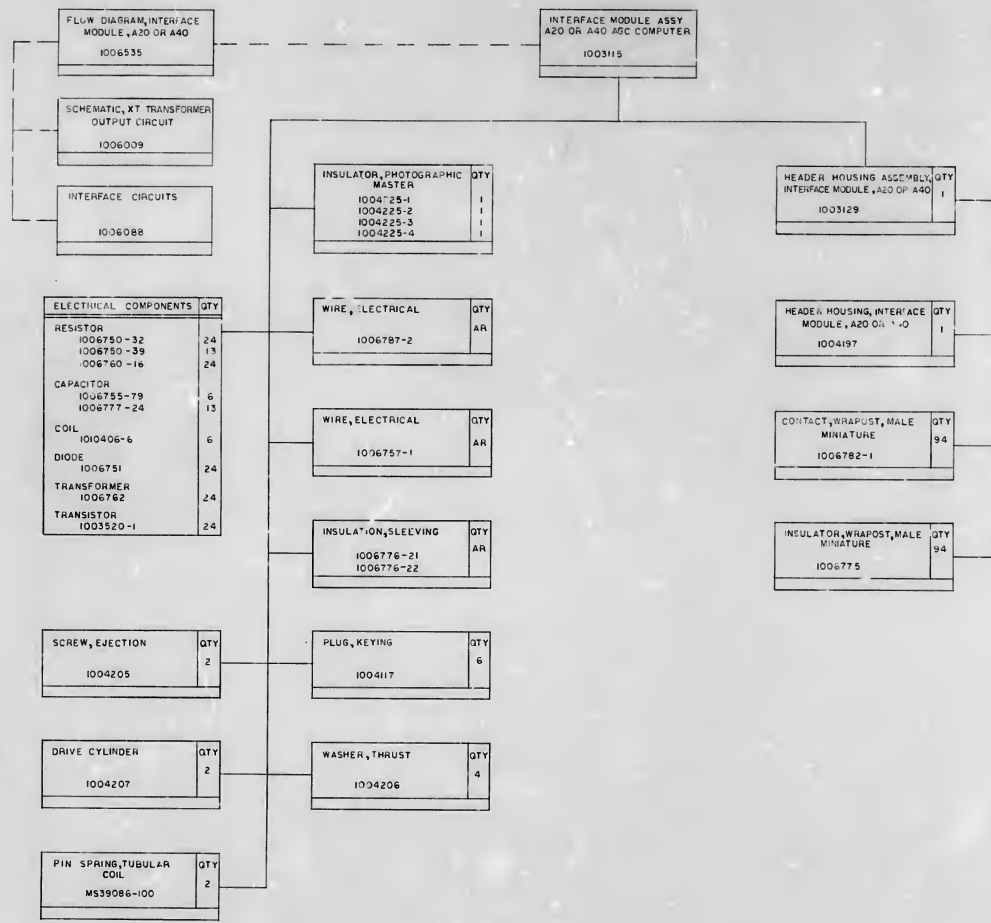
[illegible]

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-0-70327
2. A4 DENOTES A5 REQUIRED



FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 03623 DATE 3 Oct 63

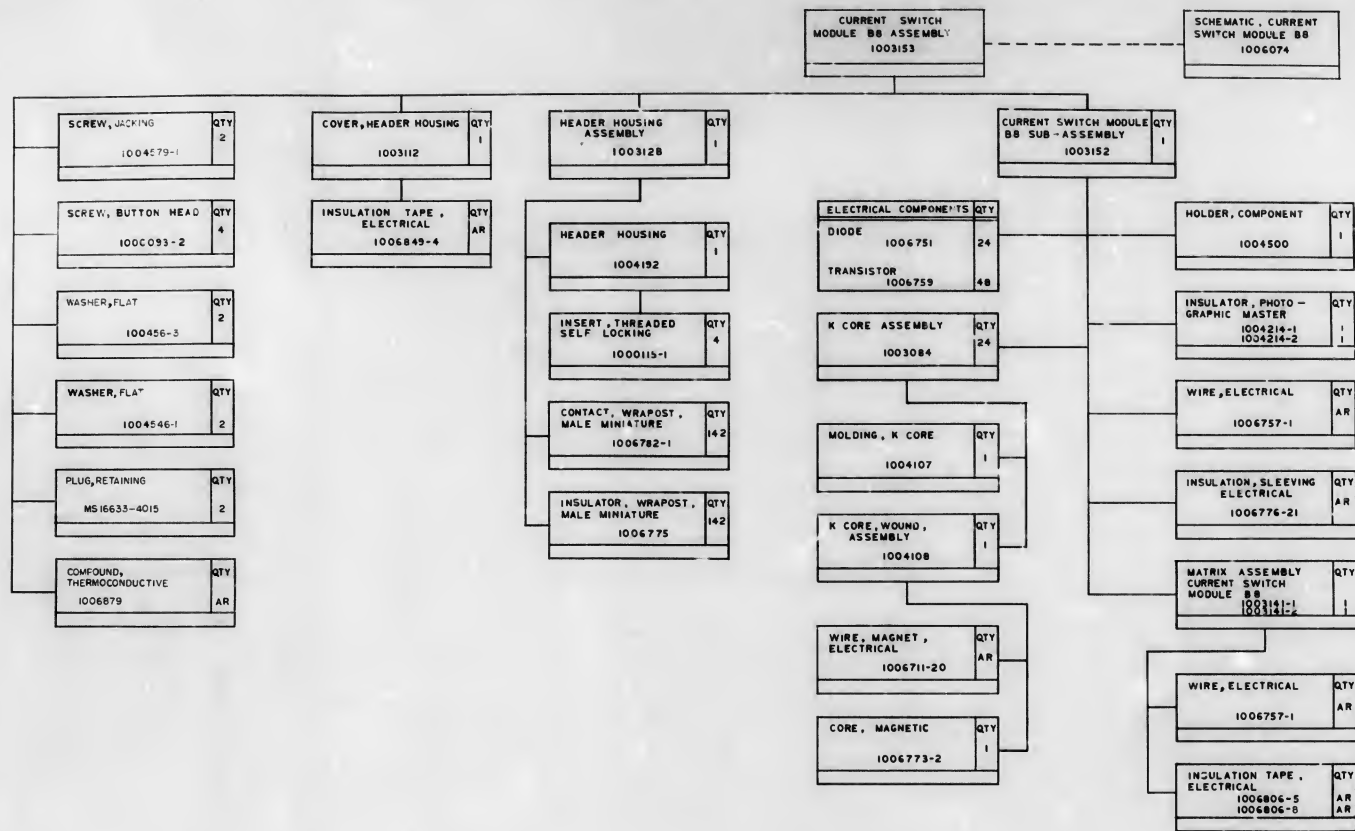
| | | | |
|--|-------------------------|--|----------|
| QTY | PART OR IDENTIFYING NO. | NUMERICAL OR DESCRIPTION | FIG. NO. |
| LIST OF MATERIALS | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES | | INSTRUMENTATION LAB MANNED SPACECRAFT CENTER HOUSTON, TEXAS DRAWN <u>DATE</u> CHECKED <u>DATE</u> APPROVAL <u>DATE</u> MATERIALS HEAT TREATMENT NEXT ASSY USED ON APPLICATION | |
| ROPE STRAND SELECT B30 MODULE FAMILY TREE DATA APPROVAL <u>DATE</u> DATA IDENT NO. <u>1005202</u> DATA DRAWING NO. <u>1005202</u> | | SHEET 1 OF 1 | |



FOR INFORMATION ONLY
 CLASS B RELEASE TDR No. 03623 DATE 3 Oct 63

NOTES:
 1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS
 PRESCRIBED BY MIL-D-70327
 2. AR DENOTES AS REQUIRED

| | | | | | | | |
|--|--|----------------------------|--|--|--|-------------|--|
| QTY REQD | | PART OR IDENTIFYING NO. | | NOMENCLATURE OR DESCRIPTION | | FIND NO. | |
| LIST OF MATERIALS | | | | | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL | | | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS INTERFACE MODULE A20 OR A40 FAMILY TREE | | | |
| INSTRUMENT, NON LAB DRAWN: <i>[Signature]</i> DATE: <i>[Date]</i> CHECKED: <i>[Signature]</i> APPROVED: <i>[Signature]</i> | | | | RADA APPROVAL: <i>[Signature]</i> CDRK IDENT NO: <i>[Number]</i> E 1006203 | | | |
| NEXT APP. USED ON | | | | SCALE | | | |
| APPLICATION | | | | SHEET 1 OF 1 | | | |



FOR INFORMATION ONLY
CLASS B RELEASE TTR No. 30863 DATE 08623

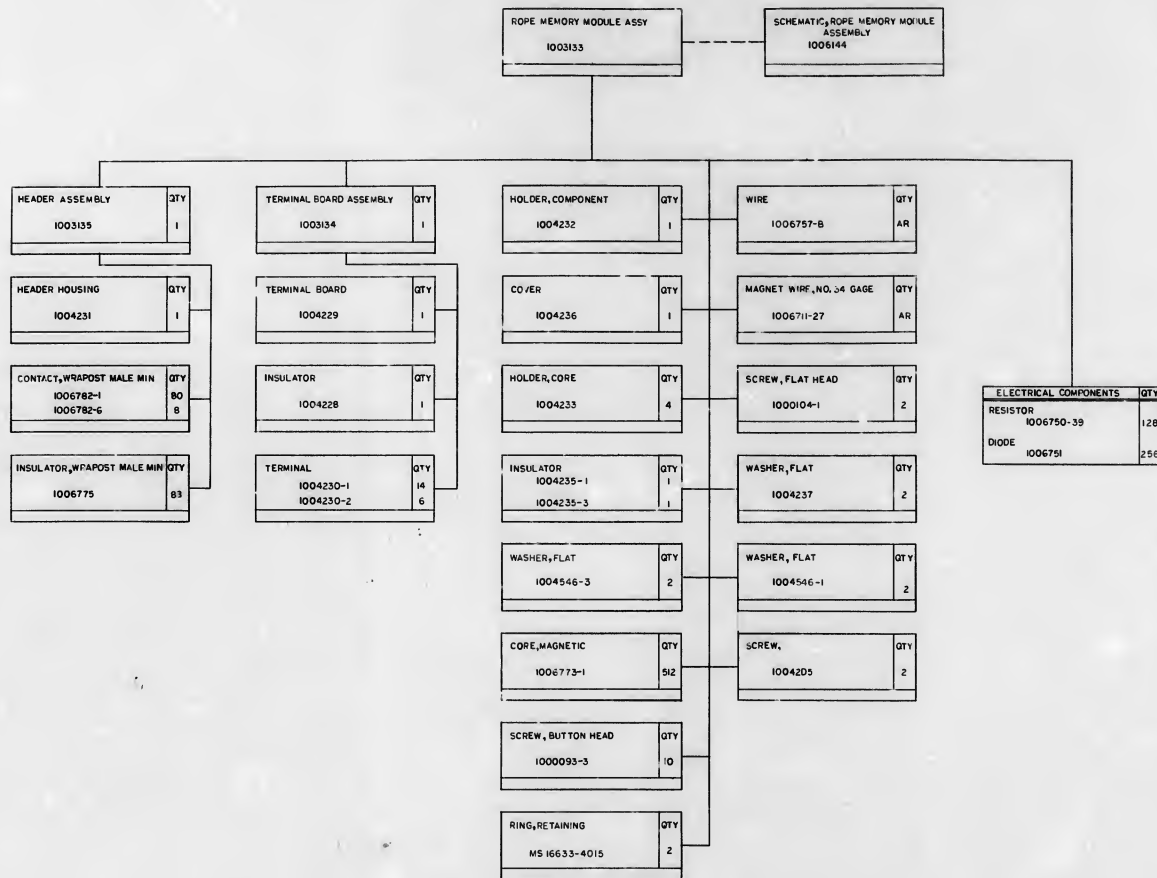
- NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED

| QTY | PART OR IDENTIFYING NO | DESCRIPTION | UNIT |
|-----|------------------------|--------------------------------------|------|
| 1 | 1006205 | CURRENT SWITCH MODULE B8 FAMILY TREE | 1 |

| | | | |
|---|------------|----------|--------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | FRAC TIONS | DECIMALS | ANGLES |
| DO NOT SCALE FROM DRAWING | MATERIAL | | |
| HEAT TREATMENT | FINISH | | |
| PLANT APPROVAL | DATE | | |

| | |
|---|---------|
| MANNED SPACECRAFT CENTER HOUSTON TEXAS | |
| CODE IDENT NO | 1006205 |
| SCALE | 1:1 |

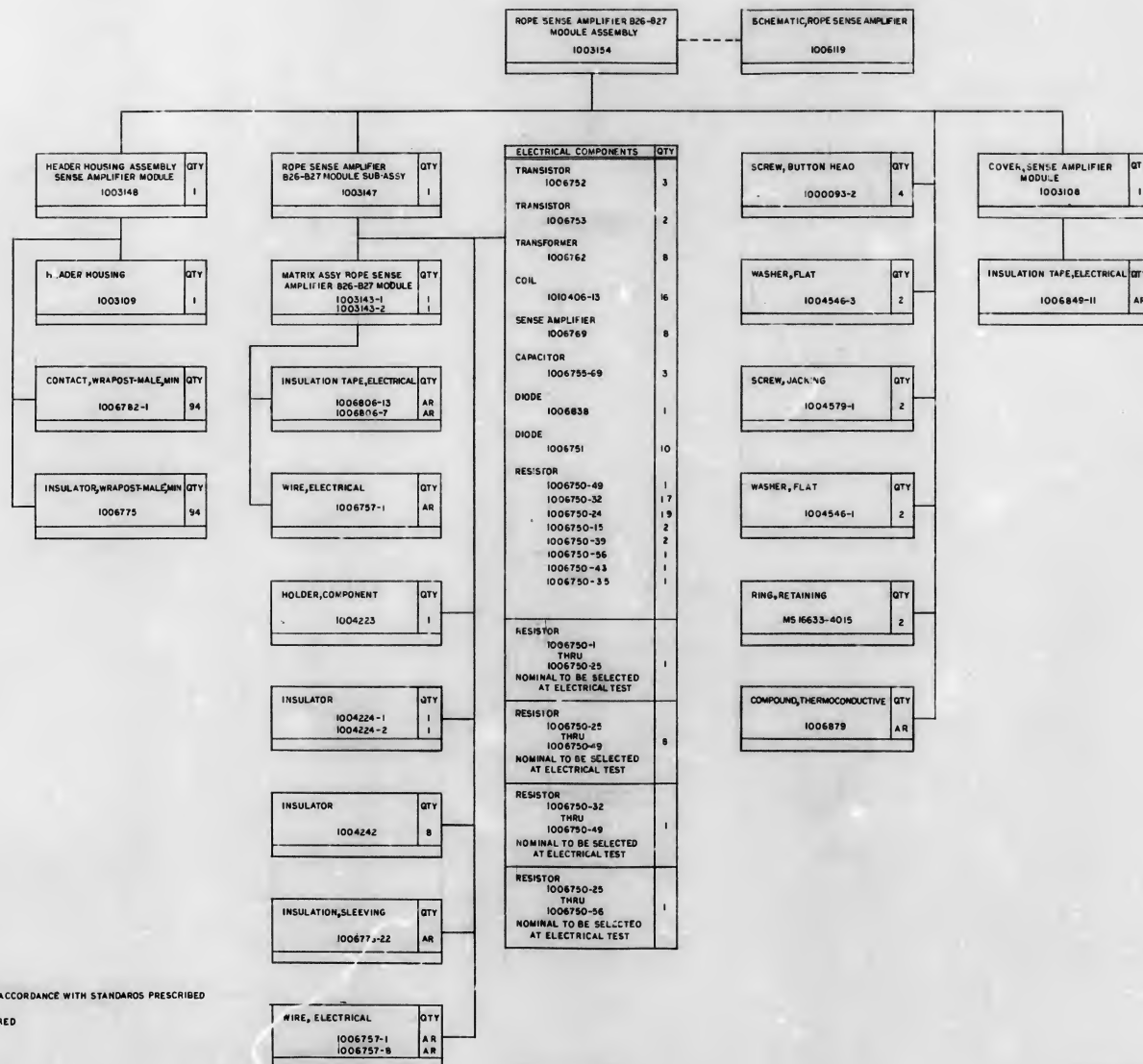
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CLASS B RELEASE TDR No. 03623 DATE 3 Oct 63

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. "AR" DENOTES AS REQUIRED

| QTY REQD | PART OR IDENTIFYING NO. | NONNOMENCLATURE OR DESCRIPTION | FIND NO. |
|---|-------------------------|--|----------|
| LIST OF MATERIALS | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES CHECKED BY <i>[Signature]</i> DATE 8-35-59 DO NOT SCALE THIS DRAWING MATERIAL APPROVAL <i>[Signature]</i> NASA APPROVAL <i>[Signature]</i> NEXT ASSY USED ON TOTAL TIGHT APPLICATION | | | |
| INSTRUMENTATION LAB HOUSTON, TEXAS | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN BY <i>[Signature]</i> DATE 8-35-59 | | ROPE MEMORY MODULE FAMILY TREE | |
| CODE IDENT NO. SIZE | | JES DRAWING NO. | |
| E 1006206 | | 1006206 | |
| SCALE | | WT | |
| SHEET 1 | | OF 1 | |



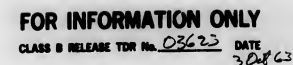
CLASS B RELEASE TDR No. 03623 DATE 30 Oct 63

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. OR OENOTES AS REQUIRED

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| | | | | | | | |
|---|--|--|--|--|--|---------|--|
| QTY REQD | | PART OR IDENTIFYING NO | | NOMENCLATURE OR DESCRIPTION | | FIRM NO | |
| | | | | LIST OF MATERIALS | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS DECIMALS ANGLES DO NOT SCALE THIS DRAWING MATERIAL | | M T Y INSTRUMENTS FROM LAB CHOCED 10/1/63 DATE 10/1/63 APPROVED 10/1/63 APPROVED 10/1/63 | | MANNED SPECIFICATION CENTER INDUCTOR TEAM | | | |
| | | ERASABLE SENSE AMPLIFIER MODULE B13-B14 FAMILY TREE | | | | | |
| | | COAT TEST UNIT TEST TYPING | | COAT CODE NO. 1006210 SIZE E PAPER DRAWING NO. 1006210 | | | |
| | | NEXT ASSY USED ON APPLICATION | | | | | |

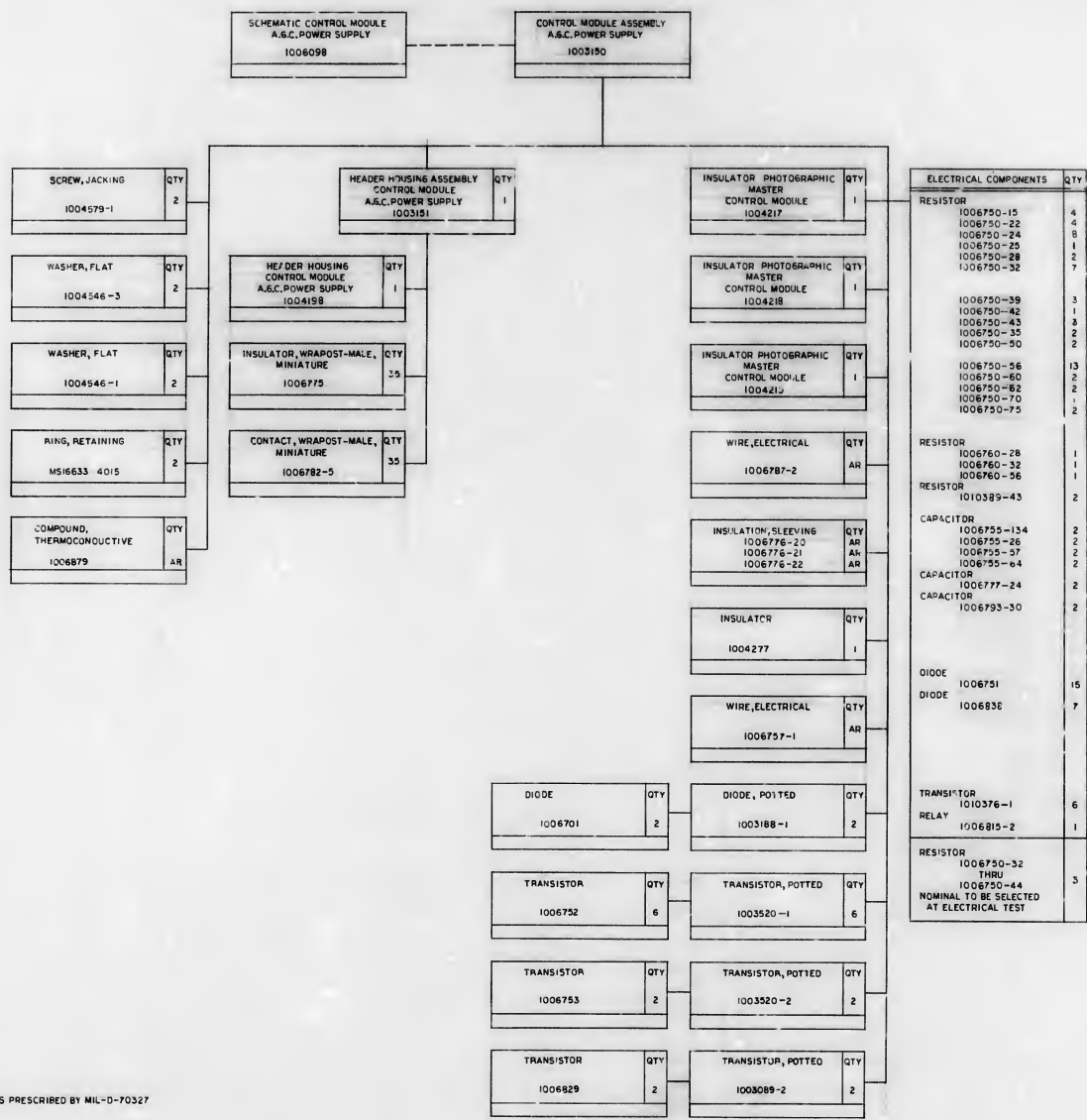


1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED

1806311

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REVISIONS 2 FEB 5
 A REVISED PER TDR 05110



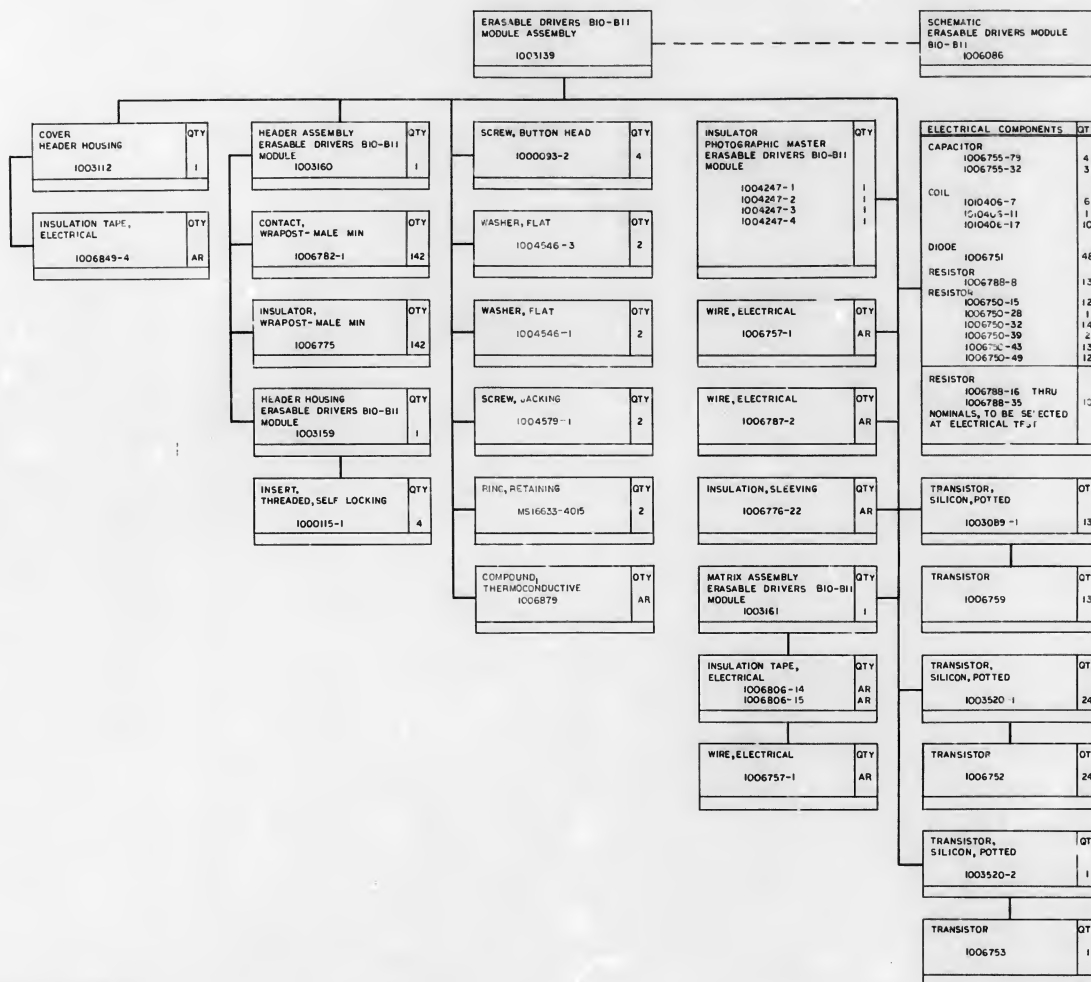
FOR INFORMATION ONLY
 CLASS B RELEASE TDR No. 05623 DATE 30 DEC 53

NOTES
 1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
 2 AR DENOTES AS REQUIRED

| | | | |
|---|------------------------|--|--------|
| QTY REQD | PART OR IDENTIFYING NO | NOMENCLATURE OR DESIGNATION | FIG NO |
| LIST OF MATERIALS | | | |
| MANNED SPACECRAFT CENTER HOUSTON TEXAS CONTROL MODULE B12 AGC POWER SUPPLY FAMILY TREE | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES DO NOT SCALE THIS DRAWING MATERIAL | | INSTRUMENTATION LAB HOUSTON TEXAS DATE 05/05/55 DRAWING NO. 1006212 APPROVAL NESA APPROVAL NEXT ASSY USED ON APPLICATION | |
| HEAT TREATMENT FINAL FINISH | | CODE IDENT NO SIZE SCALE SHEET OF | |

1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES (FRACTIONS OR DECIMALS).
2. DO NOT SCALE THIS DRAWING.
3. MATERIALS LISTED IN THE MATERIALS LIST ARE TO BE USED UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONS ARE IN INCHES (FRACTIONS OR DECIMALS).
5. DO NOT SCALE THIS DRAWING.
6. MATERIALS LISTED IN THE MATERIALS LIST ARE TO BE USED UNLESS OTHERWISE SPECIFIED.

REVISIONS 02655
1. REVISED PER TORR 0510 DATE 30-8-63



FOR INFORMATION ONLY
CLASS B RELEASE TOR No. 03625 DATE 30-8-63

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED

| QTY | PART OR IDENTIFYING NO | DESCRIPTION | UNIT |
|-----|----------------------------|---|------|
| 1 | 1003139 | ERASABLE DRIVERS BIO-BII MODULE ASSEMBLY | |
| 1 | 1003112 | COVER HEADER HOUSING | |
| 1 | 1003160 | HEADER ASSEMBLY ERASABLE DRIVERS BIO-BII MODULE | |
| 142 | 1006782-1 | CONTACT, WRAPOST- MALE MIN | |
| 142 | 1006775 | INSULATOR, WRAPOST- MALE MIN | |
| 1 | 1003159 | HEADER HOUSING ERASABLE DRIVERS BIO-BII MODULE | |
| 4 | 1000115-1 | INSERT, THREADED, SELF LOCKING | |
| 4 | 1000033-2 | SCREW, BUTTON HEAD | |
| 2 | 1004546-3 | WASHER, FLAT | |
| 2 | 1004546-1 | WASHER, FLAT | |
| 2 | 1004579-1 | SCREW, JACKING | |
| 2 | MS16633-4015 | RING, RETAINING | |
| AR | 1006879 | COMPOUND, THERMOCONDUCTIVE | |
| 1 | 1004247-1 | INSULATOR PHOTOGRAPHIC MASTER ERASABLE DRIVERS BIO-BII MODULE | |
| 1 | 1004247-2 | INSULATOR PHOTOGRAPHIC MASTER ERASABLE DRIVERS BIO-BII MODULE | |
| 1 | 1004247-3 | INSULATOR PHOTOGRAPHIC MASTER ERASABLE DRIVERS BIO-BII MODULE | |
| 1 | 1004247-4 | INSULATOR PHOTOGRAPHIC MASTER ERASABLE DRIVERS BIO-BII MODULE | |
| AR | 1006757-1 | WIRE, ELECTRICAL | |
| AR | 1006787-2 | WIRE, ELECTRICAL | |
| AR | 1006776-22 | INSULATION, SLEEVING | |
| 1 | 1003161 | MATRIX ASSEMBLY ERASABLE DRIVERS BIO-BII MODULE | |
| AR | 1006806-14 | INSULATION TAPE, ELECTRICAL | |
| AR | 1006806-15 | INSULATION TAPE, ELECTRICAL | |
| AR | 1006757-1 | WIRE, ELECTRICAL | |
| 4 | 1006755-79 | CAPACITOR | |
| 3 | 1006755-32 | CAPACITOR | |
| 6 | 1010406-7 | COIL | |
| 1 | 1010406-11 | COIL | |
| 10 | 1010406-17 | COIL | |
| 48 | 1006751 | DIODE | |
| 13 | 1006788-8 | RESISTOR | |
| 12 | 1006750-15 | RESISTOR | |
| 1 | 1006750-28 | RESISTOR | |
| 14 | 1006750-32 | RESISTOR | |
| 2 | 1006750-39 | RESISTOR | |
| 13 | 1006750-43 | RESISTOR | |
| 12 | 1006750-49 | RESISTOR | |
| 10 | 1006788-16 THRU 1006788-35 | RESISTOR | |
| 13 | 1003089-1 | TRANSISTOR, SILICON, POTTED | |
| 13 | 1006759 | TRANSISTOR | |
| 24 | 1003520-1 | TRANSISTOR, SILICON, POTTED | |
| 24 | 1006752 | TRANSISTOR | |
| 1 | 1003520-2 | TRANSISTOR, SILICON, POTTED | |
| 1 | 1006753 | TRANSISTOR | |

6
5
4
3
2
1

REVISIONS 2 3 4 5
DATE APPROVAL

SCHEMATIC
POWER SWITCH MODULE
A.G.C. POWER SUPPLY
1006097

POWER SWITCH MODULE
ASSEMBLY B2-B4
A.G.C. POWER SUPPLY
1003113

WASHER, LOCK, SPLIT, HELICAL
MS 35338-B2 QTY 3

NUT, PLAIN, HEXAGONAL
MS 20341-416B QTY 3

WIRE, ELECTRICAL
MIL-W-16878/4E SIZE NGJ6 QTY AR

INSULATION SLEEVING
MIL-I-23053 CLASS I SIZE 10 QTY AR

WIRE, ELECTRICAL
QQ-W-343 TYPE S NGJ16 QTY AR

NUT, SELF-LOCKING, 1/8 IN
MS 20364-428A QTY 1

ELECTRICAL COMPONENTS QTY
RESISTOR 1006715-2 1
RESISTOR 1006750-12 1
RESISTOR 1006750-56 2
RESISTOR 1006788-6 1
RESISTOR 1010389-43 1
RESISTOR 1010389-51 1
TRANSISTOR 1006827 1
TRANSISTOR 1006829 1
INDUCTOR 1006798 1
INDUCTOR 1006798 1
CAPACITOR 1006755-434 5
DIODE 1006791 2

DRIVE CYLINDER,
EJECTION SCREW
1004207 QTY 4

PIN, SPRING, TUBULAR, COILED
MS39086-100 QTY 4

WIRE, ELECTRICAL
1006787-2 AR
1006787-3 AR
1006787-4 AR

INSULATOR, BUSHING
1008025-2 QTY 1

SPLICE, CO'DUCTOR
1006710 QTY 2

WASHER, INSULATOR
1008024-3 QTY 1

INSULATION SLEEVING,
ELECTRICAL
1006776-14 AR
1006776-16 AR
1006776-20 AR
1006776-21 AR
1006776-22 AR

SCREW, EJECTION
1004205 QTY 4

WASHER, THRUST
1004206 QTY 8

INSULATOR PHOTOGRAPHIC
MASTER
1004215-1 1
1004215-2 1

WIRE, ELECTRICAL, NICKEL
1006737-1 AR QTY

TERMINAL STUD, INSULATED
1006708 QTY 4

BUSHING, INSULATOR
1008021-2 QTY 1

WASHER, INSULATOR
1008024-4 QTY 1

WASHER, FLAT
1008071-5 QTY 3

HEADER HOUSING ASSEMBLY
POWER SWITCH MODULE
1003124 QTY 1

INSULATOR, WRAPPOST-MALE,
MINIATURE
1006775 QTY 33

CONTACT, WRAPPOST-MALE,
MINIATURE
1006782-5 QTY 33

HEADER HOUSING
POWER SWITCH MODULE
A.G.C. POWER SUPPLY
1004116 QTY 1

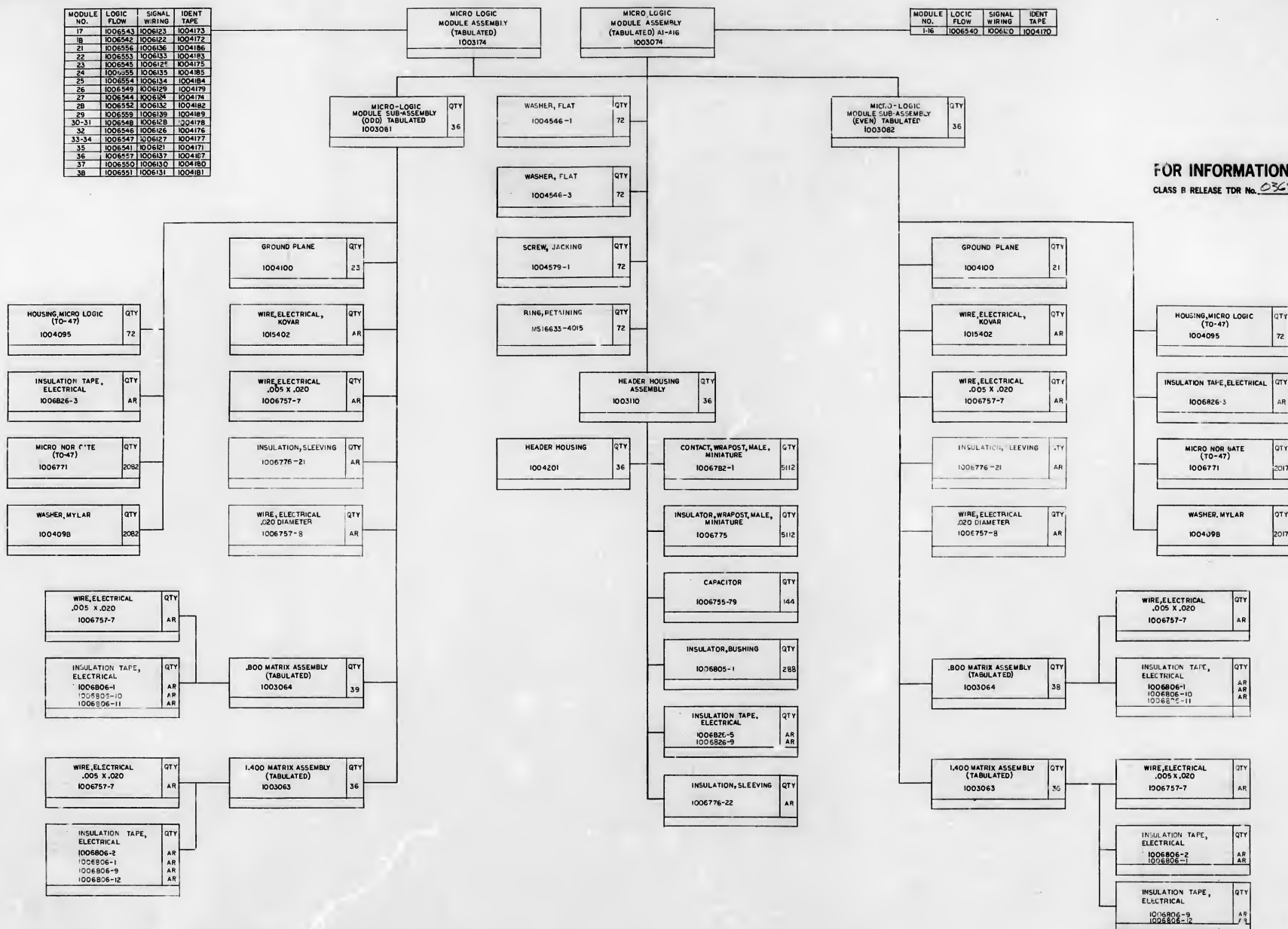
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03623 DATE 3 Oct 63

NOTES
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327
2. AR DENOTES AS REQUIRED

| QTY | PART OR IDENTIFYING NO | NONENCLATURE OR DESCRIPTION | FIND NO |
|--|------------------------|-----------------------------|---------|
| <p>UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES FRACTIONS OR DECIMALS ANGLES DO NOT SCALE TYP. FINISH MATERIAL</p> | | | |
| <p>WITNESS DESIGNED BY: DATE: 10/1/63 CHECKED BY: DATE: 10/1/63 APPROVED BY: DATE: 10/1/63</p> | | | |
| <p>HEAT TREATMENT MIL APPROVAL: DATE: 10/1/63 MIL APPROVAL: DATE: 10/1/63</p> | | | |
| <p>TEST APPROPRIATE NEXT TEST: USED ON: FINAL FINISH</p> | | | |
| <p>LIST OF MATERIALS MANNED SPACECRAFT CENTER HOUSTON, TEXAS POWER SWITCH MODULE B2-B4 FAMILY TREE MIL DRAWING NO. 1006214</p> | | | |
| <p>SCALE: 1:1 SHEET 1 OF 1</p> | | | |

| MODULE NO. | LOGIC FLOW | SIGNAL WIRING | IDENT TYPE |
|------------|------------|---------------|------------|
| 17 | 1006543 | 1006123 | 1004173 |
| 18 | 1006542 | 1006122 | 1004172 |
| 21 | 1006556 | 1006136 | 1004186 |
| 22 | 1006553 | 1006133 | 1004183 |
| 23 | 1006548 | 1006127 | 1004183 |
| 24 | 1006555 | 1006135 | 1004185 |
| 25 | 1006554 | 1006134 | 1004184 |
| 26 | 1006549 | 1006129 | 1004179 |
| 27 | 1006544 | 1006124 | 1004174 |
| 28 | 1006552 | 1006132 | 1004182 |
| 29 | 1006558 | 1006139 | 1004189 |
| 30-31 | 1006548 | 1006128 | 1004177 |
| 32 | 1006546 | 1006126 | 1004176 |
| 33-34 | 1006547 | 1006127 | 1004177 |
| 35 | 1006551 | 1006121 | 1004171 |
| 36 | 1006547 | 1006137 | 1004167 |
| 37 | 1006550 | 1006130 | 1004180 |
| 38 | 1006551 | 1006131 | 1004181 |



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03623 DATE

2. 5-7-6

NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS
PRESCRIBED BY MIL-D-70327
2. ALL NOTES AS REQUIRED

| | | | | | | | |
|---|--|-------------------------|--|--|--|--------------|--|
| QTY REQD | | PART OR IDENTIFYING NO. | | NOMENCLATURE OR DESCRIPTION | | P/N | |
| | | | | LIST OF MATERIALS | | | |
| UNIT'S DIMENSIONS SPECIFIED OTHERWISE ARE IN INCHES DECIMALS ON FRACTIONS DECIMALS ANGLES IN DEGREES 1/8" = 0.125" 1/16" = 0.0625" 1/4" = 0.25" | | | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | | |
| DO NOT SCALE THIS DRAWING MATERIAL | | | | MICRO LOGIC MODULE FAMILY TREE | | | |
| HEAT TREATMENT () | | | | CODE IDENT NO SIZE NBSA DRAWING NO | | | |
| NEXT ASY USED ON | | FINAL FINISH () | | E 1006215 | | | |
| APPLICATION () | | NET APPROVAL () | | SCALE NONE () | | SHEET 1 OF 3 | |

6

5

4

3

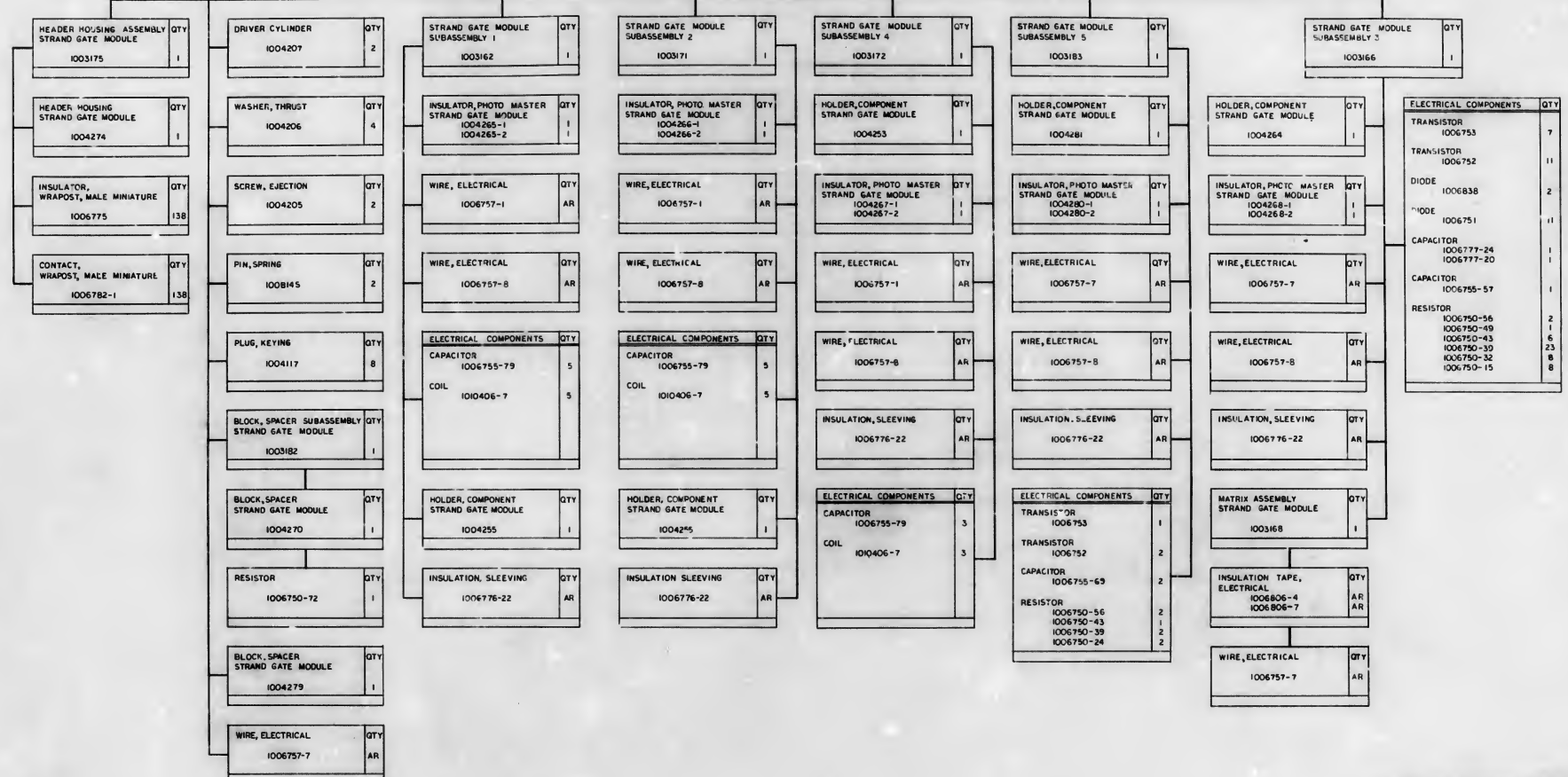
2

1

REVISIONS 2/7/57
 1006216

STRAND GATE MODULE
 ASSEMBLY B31
 1003167

SCHEMATIC
 STRAND GATE MODULE
 1006148



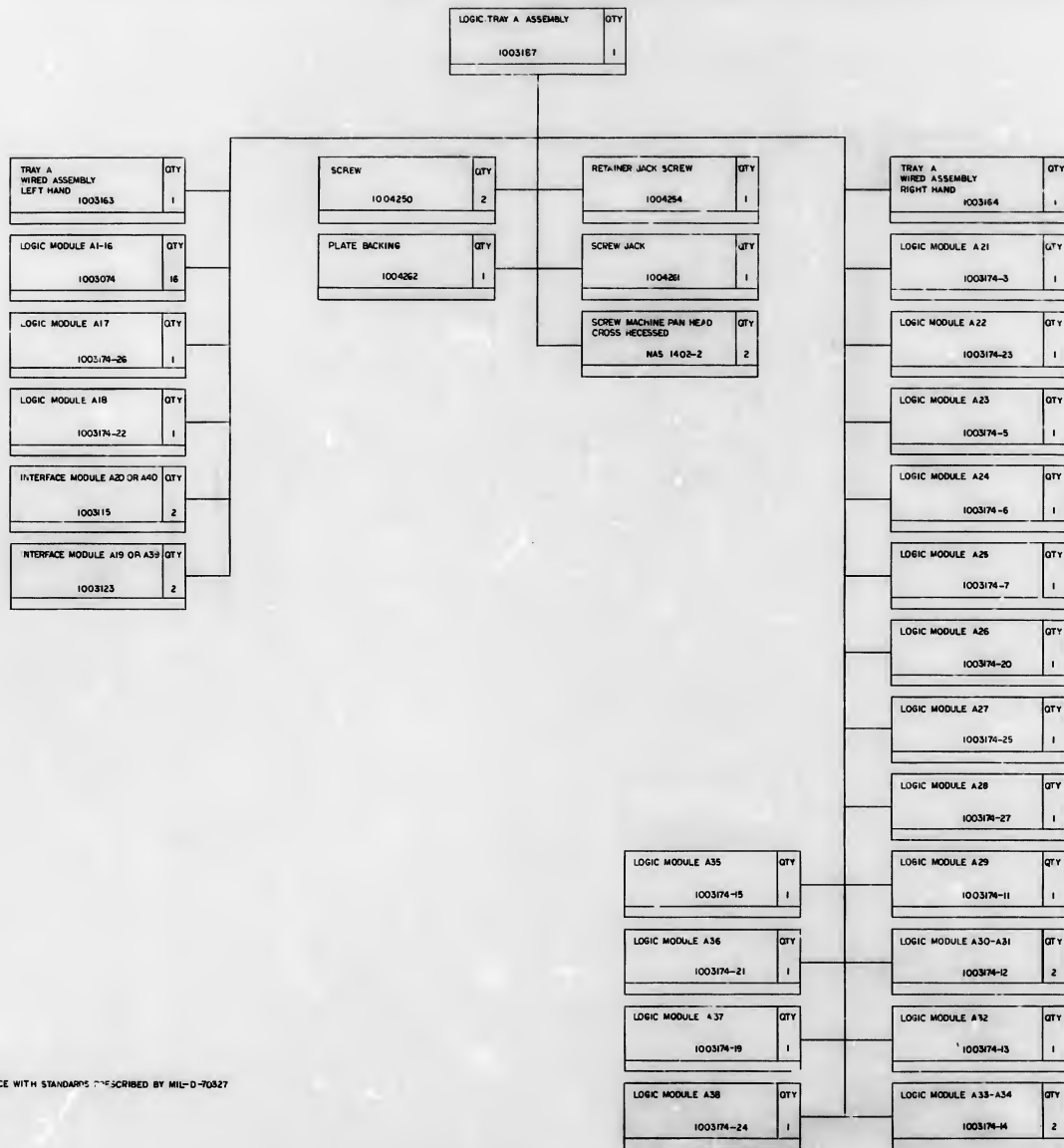
FOR INFORMATION ONLY
 CLASS & RELEASE TOR No _____ DATE

NOTES:
 1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70357
 2. AR DENOTES AS REQUIRED

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|---|---------------------------|-------------------------------|------------|
| QTY REQD | PART OR IDENTIFYING NO | NONCIRCULAR OR DESCRIPTION | FINO NO |
| INSTRUMENTATION LAB MANNED SPACECRAFT CENTER STRAND GATE MODULE ASSEMBLY B31 FAMILY TREE 1006216 | | | |
| CHECKED BY: [Signature] DATE: 2/7/57 APPROVED BY: [Signature] DATE: 2/7/57 | | | |
| NEXT APPROVAL: [Signature] DATE: 2/7/57 | | | |
| APPLICATION: [Signature] DATE: 2/7/57 | | | |

THIS DRAWING IS THE PROPERTY OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. IT IS TO BE USED FOR THE PURPOSES SPECIFIED IN THE CONTRACT. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.

REVISIONS 05738
 QTY DESCRIPTION DATE APPROVAL



NOTES:
 1. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS DESCRIBED BY MIL-D-70327
 2. AR DENOTES AS REQUIRED

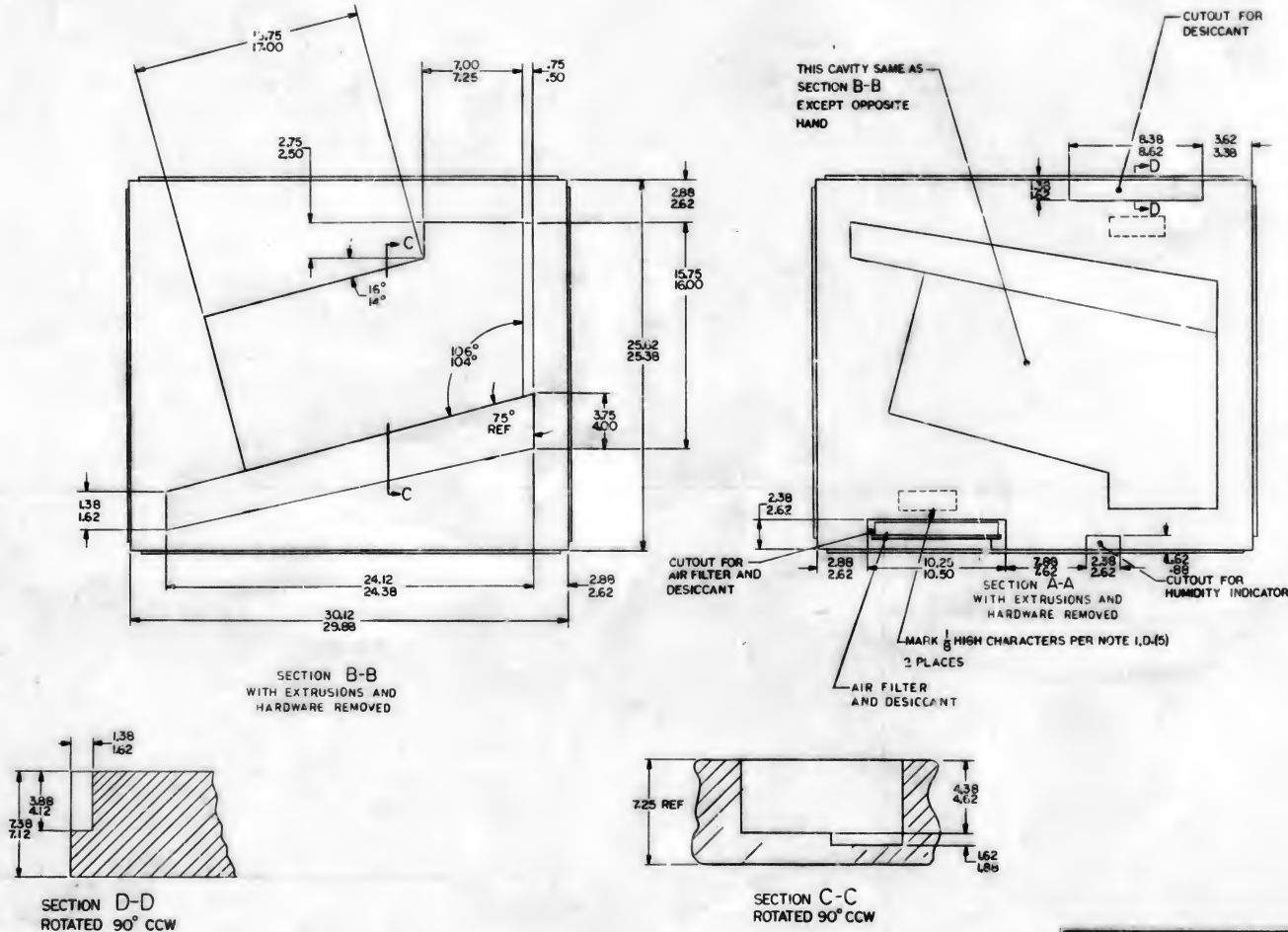
FOR INFORMATION ONLY
 CLASS B RELEASE TDR No. 25176 DATE 1/10/63

| | | | |
|---|----------------------------|---|------------|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIG NO. |
| LIST OF MATERIALS | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES CHECKED BY <i>[Signature]</i> DATE 12/2/62 DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINISH | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS TRAY A ASSEMBLY FAMILY TREE NASA DRAWING NO. 1006217 SHEET 1 OF 1 | |
| NEXT ASSY APPLICATION | | NASA APPROVAL <i>[Signature]</i> DATE 1/10/63 SCALE WT | |

A

3

| REVISIONS | | | |
|-----------|--|--------|----------|
| SYM | DESCRIPTION | DATE | APPROVED |
| - | CLASS B RELEASE PER TORR 07656 | | |
| A | CHANGED PER TORR 10446 DR S.T. <i>S.T. [signature]</i> CHG <i>[signature]</i> APPD # <i>[signature]</i> | 7/1/68 | ATOS |



FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 02656 DATE 4/18/67

| | | | |
|--|---------------------------|---|--|
| QTY REQD | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION | FIN NO |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. NAS-5-458 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN BY <i>W. J. [illegible]</i> DATE <i>2-22-66</i> CHECKED BY <i>[illegible]</i> APPROVAL BY <i>[illegible]</i> APPROVAL BY <i>[illegible]</i> APPROVAL BY <i>[illegible]</i> | | CONTAINER, SHIPPING AND STORAGE - APOLLO MAIN DISPLAY SPECIFICATION CONTROL DRAWING | |
| NASA APPROVAL BY <i>[illegible]</i> MIT APPROVAL BY <i>[illegible]</i> MIT APPROVAL BY <i>[illegible]</i> | | CODE IDENT NO — | SIZE D NASA DRAWING NO 10062 29 |
| LOCAL WORK WT | | SHEET 2 OF 2 | |

REQUIREMENTS:

1. GENERAL:

- UNITS SHALL MEET THE REQUIREMENTS OF MIL-C-22443 (MCP) TYPE I, CLASS 1, STYLE D WITH THE ADDITIONS AND EXCEPTIONS SPECIFIED HEREIN. SUBMITTAL OF A PREPRODUCTION SAMPLE SHALL NOT BE REQUIRED.
- THE SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN NO 1015404 CLASS 3.
- UNITS SHALL BE DESIGNED TO MEET THE APOLLO ENVIRONMENTAL CRITERIA SPECIFICATION DATED MARCH 25, 1963 OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HANDED SPACECRAFT CENTER, HOUSTON, TEXAS, PARAGRAPHS 3.2.1 THROUGH 3.2.1.16 WITH THE FOLLOWING EXCEPTIONS:
 - PARAGRAPH 3.2.1.8.2 DUST SIZE SHALL BE 0.0004 INCH MAXIMUM.
 - DELETE PART (b) OF PARAGRAPH 3.2.1.8.2, THAT IS "SIZE DISTRIBUTION - AT LEAST 90% ARE BETWEEN 0.00002 AND 0.00008 INCH IN SIZE".
- MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH NO 1002019 AND AS SPECIFIED HEREIN. UNLESS OTHERWISE SPECIFIED MARKING SHALL BE SILK-SCREENED USING RED COLOR IN ACCORDANCE WITH FEDERAL STANDARD 595 COLOR NUMBER 21105.
 - MARK IN LOCATION INDICATED ON DRAWING "DESICCATED - DO NOT OPEN UNTIL READY FOR USE OR INSPECTION".
 - MARK ON TOP PANEL OF COVER "CAUTION - DELICATE ELECTRONIC ASSEMBLY - THIS SIDE UP".

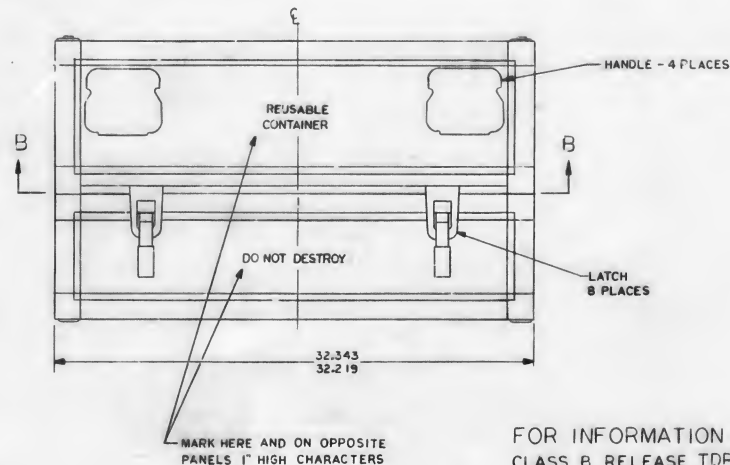
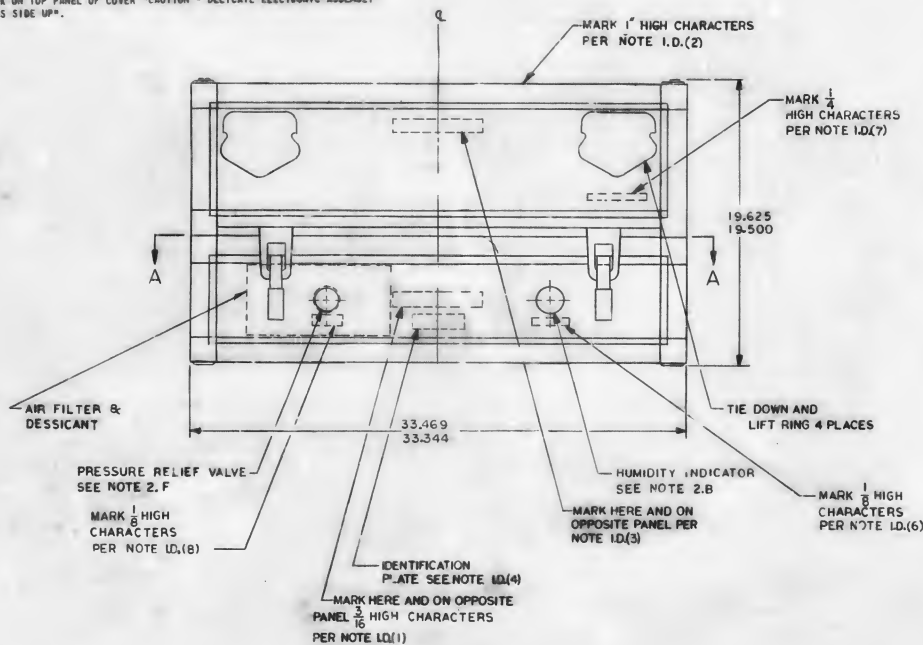
- MARK IN LOCATION INDICATED ON DRAWING "CAUTION - SECURE ALL LATCHES BEFORE LIFTING". THE WORD CAUTION SHALL BE PRINTED IN 1/4 INCH HIGH CHARACTERS AND THE REMAINING WORDS SHALL BE PRINTED IN 3/16 INCH CHARACTERS.
- EACH CONTAINER SHALL HAVE AN IDENTIFICATION PLATE IN ACCORDANCE WITH NASA DRAWING 1020006 IN THE LOCATION INDICATED HEREON. THE NAME AND PART NUMBER SHALL BE THE SAME AS THE TITLE, DRAWING NUMBER AND REVISION LETTER HEREON.
- THE BOTTOM CUSHION IN THE CONTAINER SHALL BE PROVIDED WITH TWO PERMANENTLY ATTACHED METAL PLATES OR EQUIVALENT IN LOCATIONS INDICATED ON DRAWING SPECIFYING THE DESICCANT REQUIREMENT.
- MARK IN LOCATION INDICATED ON DRAWING "INSPECT EQUIPMENT AND REPLACE DESICCANT IF INDICATOR IS PINK".
- MARK DIRECTLY UNDER EACH TIE DOWN AND LIFT RING "SLING LIFT HERE".
- MARK IN LOCATION INDICATED ON DRAWING "TWO-WAY AUTOMATIC RELIEF VALVE. DEPRESS CORE BEFORE OPENING CONTAINER".

2. ACCEPTANCE AND INSPECTION: (100 PERCENT)

- A CERTIFICATE OF COMPLIANCE WITH ALL THE REQUIREMENTS SPECIFIED HEREIN SHALL ACCOMPANY EACH SHIPMENT.
- UNITS SHALL BE PROVIDED WITH A HUMIDITY INDICATOR IN ACCORDANCE WITH MIL-I-26860.
- UNITS SHALL BE PROVIDED WITH A DESICCANT HOLDER AND DUST SHIELD LOCATED BEHIND PRESSURE RELIEF VALVE.
- SECURITY SEAL: PROVISION SHALL BE MADE SO THAT LATCHES CAN BE SECURED WITH A MULTI-STRAND WIRE-LEAD SEAL.
- UNITS SHALL BE PROVIDED WITH POLYURETHANE FOAM CUSHIONS BONDED TO THE INTERIOR SURFACES IN THE CONFIGURATION INDICATED ON DRAWING. DENSITY OF POLYURETHANE FOAM SHALL BE 2-1/2 POUNDS PER CUBIC FOOT.
- UNITS SHALL BE PROVIDED WITH AN AUTOMATIC PRESSURE RELIEF VALVE TO RELIEVE PRESSURE DIFFERENTIALS IN EXCESS OF 0.5 PSI.

3. LESION:

- FINISH: FINISH SHALL BE IN ACCORDANCE WITH MIL-C-22443 EXCEPT ZINC CHROMATE PRIMER PER MIL-P-8585 SHALL BE FOLLOWED BY 2 COATS OF ENAMEL PER NASA DRAWING 1016104.
- MATERIAL:
 - WELDING: IN ACCORDANCE WITH MIL-M-530, TYPE I, CLASS 7, .031 THICK.
 - PLATE: ALUMINUM ALLOY 6061-T6 PER QQ-A 00256/11 .125 THICK.



FOR INFORMATION ONLY
CLASS B RELEASE. TORR NO. 07656 DATE

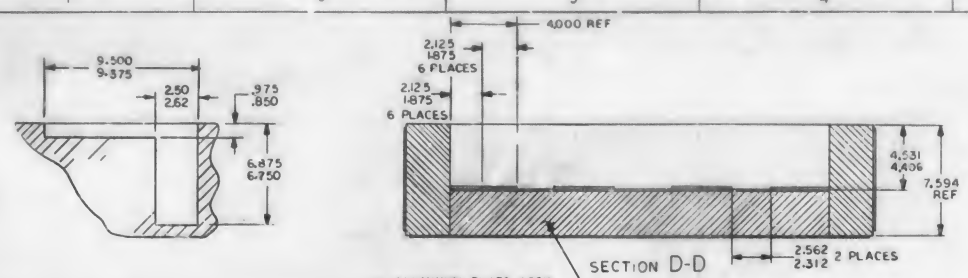
PROCURE ONLY FROM APPROVED SOURCES LISTED IN NO 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70587

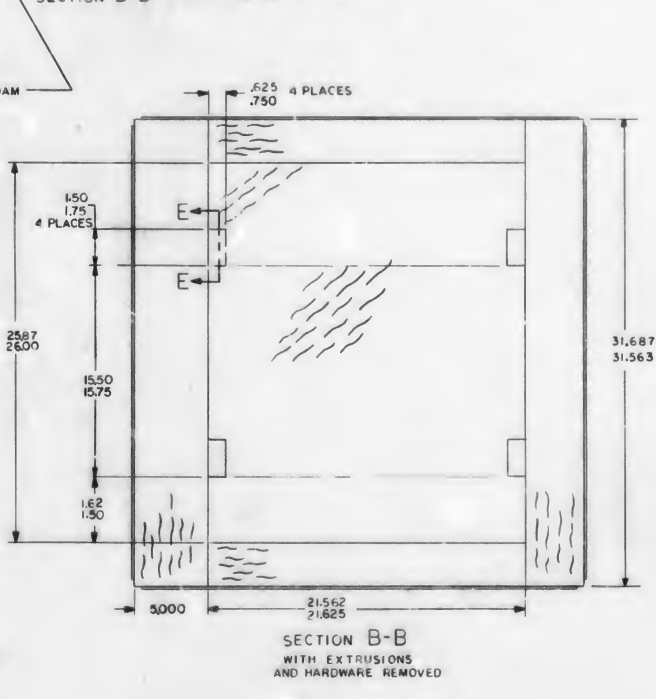
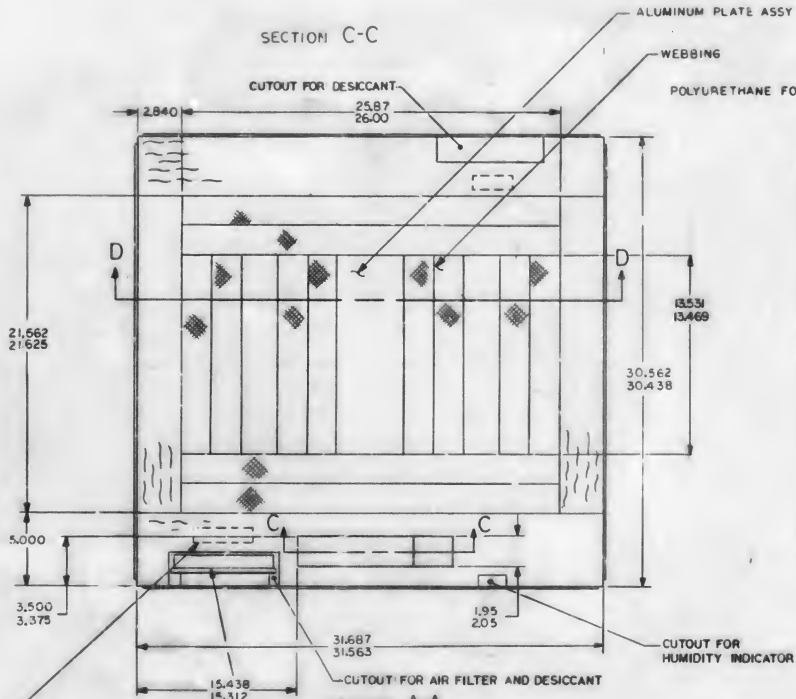
| SHEET 1 | SHEET 2 |
|---------------------------|---------|
| REVISION STATUS OF SHEETS | |

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|--|--|------------------------|--|---|--|---------|--|
| QTY REQD | | PART OR IDENTIFYING NO | | NOMENCLATURE OR DESCRIPTION | | FIND NO | |
| LIST OF MATERIALS | | | | | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. NAS-8-836 | | | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES .002 .002 .002 DO NOT SCALE THIS DRAWING MATERIALS | | | | DRAWN BY [Signature] CHECKED BY [Signature] APPROVAL BY [Signature] SPECIAL BY [Signature] NASA APPROVAL BY [Signature] EIT APPROVAL BY [Signature] MTT APPROVAL BY [Signature] | | | |
| SEE NOTES | | | | CONTAINER, SHIPPING AND STORAGE- APOLLO GUIDANCE COMPUTER SPECIFICATION CONTROL DRAWING | | | |
| NEXT ASSY USED ON APPLICATION: | | | | COOL IDENT NO SIZE D SCALE NONE WT NASA DRAWING NO 1006230 | | | |

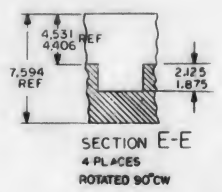
1. THIS DRAWING IS A PRELIMINARY DESIGN. IT IS NOT TO BE USED FOR FABRICATION OR CONSTRUCTION OF THE ITEM UNLESS IT IS APPROVED BY THE DESIGNING OFFICE. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN THE NECESSARY APPROVALS AND TO FOLLOW THE INSTRUCTIONS OF THE DESIGNING OFFICE. IT IS NOT TO BE USED FOR FABRICATION OR CONSTRUCTION OF THE ITEM UNLESS IT IS APPROVED BY THE DESIGNING OFFICE. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN THE NECESSARY APPROVALS AND TO FOLLOW THE INSTRUCTIONS OF THE DESIGNING OFFICE.



| REVISIONS | | | |
|-----------|-----------------------------------|------|----------|
| BY | DESCRIPTION | DATE | APPROVED |
| 1 | CLASS B RELEASE PER TORR NO. 7664 | | |



FOR INFORMATION ONLY
CLASS B RELEASE TORR NO. 7664 DATE



MARK 1/8 HIGH CHARACTERS PER NOTE
LD(6)
2 PLACES

AIR FILTER
AND DESICCANT

SECTION A-A
WITH EXTRUSIONS
AND HARDWARE REMOVED

CUTOUT FOR
HUMIDITY INDICATOR

SECTION B-B
WITH EXTRUSIONS
AND HARDWARE REMOVED

SECTION E-E
4 PLACES
ROTATED 90° CW

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-10857

| | | | |
|---|---------------------------|--------------------------------|-----------------|
| QTY REQD | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION | FIG NO |
| LIST OF MATERIALS | | | |
| MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | | |
| CONTAINER, SHIPPING AND STORAGE - APOLLO GUIDANCE COMPUTER | | | |
| SPECIFICATION | | CONTROL DRAWING | |
| NASA APPROVAL | DATE | SIZE | NASA DRAWING NO |
| BIT APPROVAL | DATE | D | 1006230 |
| BIT APPROVAL | DATE | SCALE | SHEET 2 OF 2 |

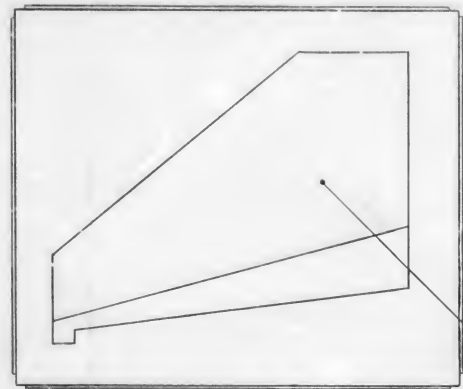
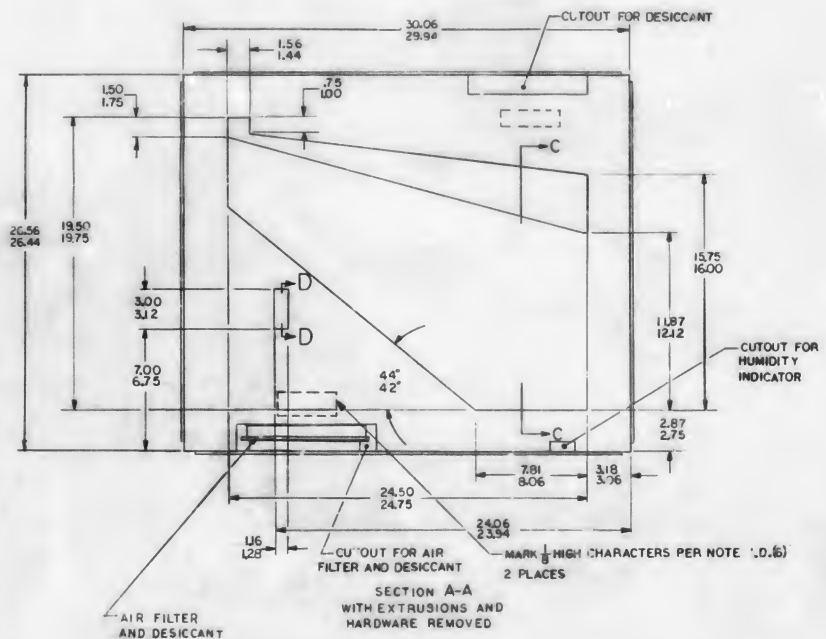
INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-9-70321

NOTES - THIS DRAWING SHOWS SPECIFICATIONS ON THIS DATE AND MAY BE SUBJECT TO CHANGE WITHOUT NOTICE. THE DRAWING IS NOT TO BE USED FOR CONSTRUCTION OF THE PART UNLESS IT IS APPROVED BY THE DESIGN ENGINEER. THE DRAWING IS NOT TO BE USED FOR CONSTRUCTION OF THE PART UNLESS IT IS APPROVED BY THE DESIGN ENGINEER. THE DRAWING IS NOT TO BE USED FOR CONSTRUCTION OF THE PART UNLESS IT IS APPROVED BY THE DESIGN ENGINEER.



SECTION C-C
ROTATED 90° CCW

SECTION D-D
ROTATED 90° CCW



SECTION B-B
WITH EXTRUSIONS AND
HARDWARE REMOVED

THIS CAVITY SAME AS
IN SECTION A-A EXCEPT
OPPOSITE HAND

FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 07656 DATE 4/11/67

| QTY REQD | | PART OR IDENTIFYING NO | | NOMENCLATURE OR DESCRIPTION | | FIND NO | |
|---|--|------------------------|--|---|--|---------|--|
| LIST OF MATERIALS | | | | | | | |
| RAYTHEON CO LEXINGTON, MASS PROJECT NO. NAS-65 | | | | NASANNED SPACECRAFT CENTER HOUSTON, TEXAS | | | |
| DRAWN <i>[Signature]</i> CHECKED <i>[Signature]</i> APPROVAL <i>[Signature]</i> DATE <i>[Date]</i> | | | | CONTAINER, SHIPPING AND STORAGE- APOLLO NATIONAL DISPLAY SPECIFICATION CONTROL DRAWING | | | |
| SEE NOTES | | | | CODE IDENT NO SIZE NASA DRAWING NO D 1006231 | | | |
| APPLICATION | | | | SCALE None WT SHEET 2 OF 2 | | | |

1006231

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A SPECIFICALLY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, PROVIDED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE CONSIDERED BY IMPLICATION OR OTHERWISE AS AN ADOPTION OR LICENSE BY THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR COMPANY, OF ANY RIGHTS OR POWERS TO MANUFACTURE, USE, OR SELL AN INVENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
- MARKING:** PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED, IN ACCORDANCE WITH ND 1002019, WITH THE NASA PART NUMBER (DRAWING NUMBER, DASH NUMBER, AND REVISION). UNIT PACKAGES AND SHIPPING CONTAINERS SHALL BE MARKED EXTERNALLY AND INTERNALLY, IN ACCORDANCE WITH MIL-STD-129, WITH THE MANUFACTURER'S NAME, PART NUMBER, LOT CODE OR NUMBER, AND NASA PART NUMBER.

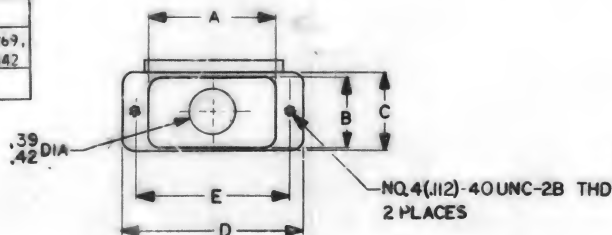
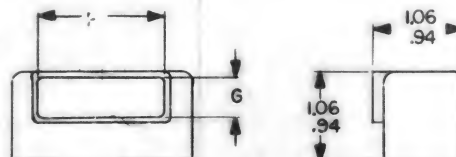
2. ACCEPTANCE AND INSPECTION:

- DIMENSIONS: AS SHOWN HEREIN.
- CERTIFICATION: COMPLIANCE WITH THE MATERIAL AND FINISH DESIGN REQUIREMENTS SHALL BE CERTIFIED WITH EACH SHIPMENT.
- PARTS INCLUDED: EACH POTTING SHELL SHALL BE SUPPLIED TOGETHER WITH A PIECE OF ROUND TETRAFLUOROETHYLENE (TFE) TUBING AS LOOSE PIECES. THE NOMINAL TUBING DIMENSIONS SHALL BE .28 ID X .38 OD X .81 LONG.

3. DESIGN:

- MATERIAL: ALUMINUM CASTINGS PER QQ-A-601 OR EXTRUSIONS PER QQ-A-270. TETRAFLUOROETHYLENE TUBING PER MIL-R-8791.
- FINISH: CADMIUM PLATING WITH SUPPLEMENTARY OLIVE DRAB CHROMATE FILM PER QQ-P-416, CLASS 3, TYPE II.

| DASH NO. | DIMENSION | | | | | | | DESIGNED FOR USE WITH CONNECTORS PER NASA DWG NO. |
|----------|-----------|------|-----|-------|-------|------|-----|---|
| | A | B | C | D | E | F | G | |
| -1 | 2.03 | .438 | .53 | 2.780 | 2.460 | 2.03 | .44 | 1006690 |
| -2 | 3.38 | .620 | .72 | 4.128 | 3.808 | 3.36 | .56 | 1006268, 1006269, 1010641, 1010642 |
| -3 | 1.44 | .796 | .89 | 1.995 | 1.718 | 1.44 | .44 | 1010411-1 |



FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO 08544 DATE 5/19/64

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| | | |
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| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE NOTES HEAT TREATMENT FINAL FINISH NEXT ASSY USED ON APPLICATION |
| | | SEE NOTES |

| | | | |
|---|-------------------------|---|------------------------------------|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND I.O. |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. NAS 9-498 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN S.T.A. DATE 4/4/64 CHECKED J. B. B. DATE 4/4/64 APPROVAL J. B. B. DATE 4/4/64 APPROVAL K.E. B. DATE 4/4/64 | | SHELL, POTTING ELECTRICAL CONNECTOR, 90° SPECIFICATION CONTROL DRAWING | |
| NASA APPROVAL C. J. B. DATE 4/4/64 MIT APPROVAL C. J. B. DATE 4/4/64 MIT APPROVAL J. B. B. DATE 4/4/64 | | CODE IDENT NO. SIZE C | NASA DRAWING NO. 1006232 |
| SCALE NONE | | WT | SHEET 1 OF 1 |

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NOTES:

1. GENERAL REQUIREMENTS:

- THESE RELAYS SHALL BE CAPABLE OF MEETING THE GENERAL REQUIREMENTS OF MIL-R-5757D IN ADDITION TO THE PARTICULAR REQUIREMENTS BELOW.
- THESE RELAYS SHALL BE MANUFACTURED TO MIL-Q-9858.
- MARKING: (1) UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED, PER ND 1002019, WITH THE VOLTAGE RATING. (2) INDIVIDUAL AND COLLECTIVE PACKAGING SHALL BE MARKED INTERNALLY AND EXTERNALLY PER ND 1002215 WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, PART NUMBER, QUANTITY ENCLOSED, LOT CODE OR NUMBER, AND THE NASA PART NO. (DRAWING NUMBER, DASH NUMBER AND REVISION LETTER).

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- DIMENSIONS: AS DELINEATED HEREIN.
- ELECTRICAL CHARACTERISTICS:
 - PULL-IN VOLTAGE: MUST PULL IN AT 9 VDC MAXIMUM.
 - INSULATION RESISTANCE: 100 MEGOHMS MINIMUM BETWEEN ALL MUTUALLY INSULATED TERMINALS.
 - DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS MINIMUM BETWEEN ALL MUTUALLY INSULATED TERMINALS.
- MATERIAL CERTIFICATION: COMPLIANCE WITH MATERIAL REQUIREMENTS SHALL BE CERTIFIED WITH EACH SHIPMENT.

3. DESIGN REQUIREMENTS:

- OPERATING LIFE: (1) ONE MILLION OPERATIONS MINIMUM AT +25°C NO LOAD. (2) ONE HUNDRED THOUSAND OPERATIONS AT -25°C WITH RATED CONTACT LOADS.
- CONSTRUCTION:
 - TYPE OF ENCLOSURE: NONE - OPEN CONSTRUCTION
 - MATERIALS: CONTACTS, SILVER; INSULATING MATERIAL, PHENOLIC LAMINATE; TERMINALS, SOLDER DIPPED BRASS; ALL OTHER MATERIALS SHALL BE CORROSION-RESISTANT METAL OR METAL SUITABLY PLATED TO RESIST CORROSION.
 - CONTACT FORM: DPDT
- RATINGS:
 - CONTACTS: 8 AMPERES AT 115 VRMS 60 CPS RESISTIVE LOAD
2.6 AMPERES AT 115 VRMS 60 CPS INDUCTIVE LOAD.
 - COIL DISSIPATION: 1.6 WATTS NOMINAL, CONTINUOUS 6 WATTS MAXIMUM AT -45°C TO +25°C AMBIENT TEMPERATURE RANGE.
 - COIL VOLTAGE: 12 VDC NOMINAL.

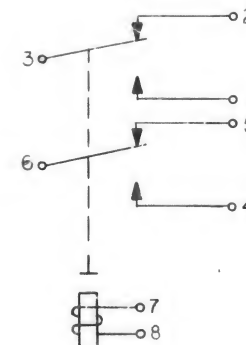
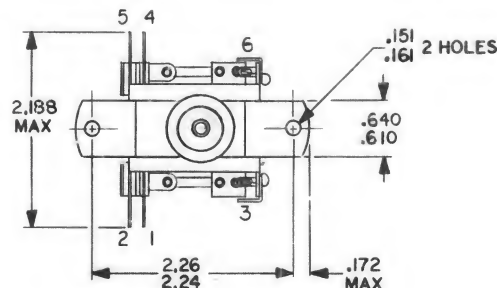
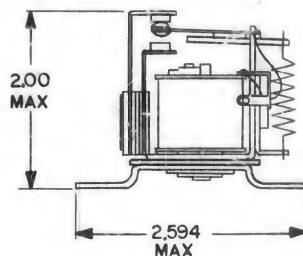


FIGURE 1
SCHEMATIC

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| | | | |
|-------------|--|---------|---|
| | | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON |
| | | | FRACTIONS DECIMALS ANGLES |
| | | | ± ± + |
| | | | DO NOT SCALE THIS DRAWING |
| | | | MATERIAL |
| | | | SEE NOTE |
| | | | HEAT TREATMENT |
| NEXT ASSY | | USED ON | FINAL FINISH |
| APPLICATION | | | SEE NOTE |

| | | | |
|---|-------------------------|--|----------------------------|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND NO |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. NAS 9-498 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN S.T. Quibbe DATE 7/1/64 CHECKED J. H. K. DATE 7/1/64 APPROVAL H. W. Moore 7/1/64 APPROVAL J. H. K. DATE 7/1/64 | | RELAY, ARMATURE, POWER, DPDT | |
| NASA APPROVAL A. C. M. DATE 4/15/64 MIT APPROVAL J. H. K. DATE 4/15/64 MIT APPROVAL C. Spalding 4/15/64 | | CODE IDENT NO C | NASA DRAWING NO 1006234 |
| SCALE NONE | | WT | SHEET 1 OF 1 |

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A SPECIFICALLY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY INADEQUACIES, OMISSIONS, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, RECOMMENDED, OR IN ANY WAY SUPPORTED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE TAKEN AS A GUARANTEE OR OTHER FORM OF ENDORSEMENT. NO PART OF THIS NOTICE SHALL BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM THE GOVERNMENT. ANY VIOLATION OF THIS NOTICE MAY BE SUBJECT TO PENALTIES UNDER THE PATENT AND TRADEWRIGHT LAWS OF THE UNITED STATES.

REQUIREMENTS:

1. GENERAL:

- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
- PACKAGES SHALL BE LEGIBLY MARKED, PER ND 1002019 WITH THE MANUFACTURERS NAME AND/OR SYMBOL, AND NASA PART NUMBER (DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER).

2. ACCEPTANCE AND INSPECTION:

- MATERIAL CERTIFICATION: COMPLIANCE WITH MATERIAL REQUIREMENT SHALL BE CERTIFIED WITH EACH SHIPMENT.
- MATERIAL: WHITE POLYVINYL CHLORIDE SHEET PER L-V-351 SANDWICHED BETWEEN TWO LAYERS OF POLYETHYLENE TERAPHTHALATE (MYLAR) FILM PER MIL-I-631, TYPE G, FORM F, GRADE A, CLASS I AND BONDED WITH AN ACRYLIC ADHESIVE.
- APPEARANCE: THERE SHALL BE NO ROUGH OR BURRED EDGES. THERE SHALL BE NO DELAMINATION OR BLISTERING ANYWHERE WHICH EXCEEDS 0.06 IN ANY DIMENSION.
- SIZE: SEE TABULATION
- CONSTRUCTION: THE LAMINATED SHEET SHALL HAVE A PRESSURE SENSITIVE ADHESIVE APPLIED TO ONE SIDE WHICH SHALL HAVE A RELEASE PAPER PROTECTION.

3. DESIGN:

- STORAGE LIFE: 1 YEAR MINIMUM AT ROOM TEMPERATURE AND HUMIDITY WITHOUT THE ADHESIVE DRYING OUT
- AMBIENT TEMPERATURE RANGE: -40°F TO +140°F.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| DASH NO. | W X L X T (INCHES) |
|----------|-------------------------------------|
| -1 | 18 ± 1/16 X 19 ± 1/16 X .015 ± .002 |
| -2 | 19 ± 1/16 X 19 ± 1/16 X .015 ± .002 |

* T = THICKNESS OF BASE MATERIAL

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

| REVISIONS | | | |
|-----------|--------------------------------|--------|----------|
| SYM | DESCRIPTION | DATE | APPROVED |
| - | CLASS B RELEASE PER TDRR 02553 | 4/7/64 | 88 |

FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 02553 DATE 4/7/64

| | | | | |
|--|--|---|-----------------------------|------------------|
| QTY REQD | | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND NO |
| LIST OF MATERIALS | | | | |
| RAYTHEON CO. LEXINGTON, MASS. CONTRACT NO. NAS 9-490 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | |
| DRAWN S. J. D. DATE 4/7/64 CHECKED J. B. L. DATE 4/7/64 APPROVAL J. B. L. DATE 4/7/64 APPROVAL J. B. L. DATE 4/7/64 | | PLASTIC SHEET, LAMINATED, PRESS. SENSITIVE, ADH. BACKED SPECIFICATION CONTROL DRAWING | | |
| NASA APPROVAL C. M. G. DATE 4/7/64 MIT APPROVAL J. B. L. DATE 4/7/64 MIT APPROVAL C. M. G. DATE 4/7/64 | | CODE IDENT NO. | SIZE | NASA DRAWING NO. |
| | | | C | 1006237 |
| | | SCALE | NONE | WT |
| | | SHEET 1 OF 1 | | |

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A SPECIFICALLY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR NOT TO BE EMPLOYED BY IMPLICATION OR OTHERWISE IN ANY MANNER, LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

| REVISIONS | | | |
|-----------|--------------------------------|------|----------|
| SYM | DESCRIPTION | DATE | APPROVED |
| - | CLASS B RELEASE PER TDRR 11460 | | |

REQUIREMENTS:

1. GENERAL:

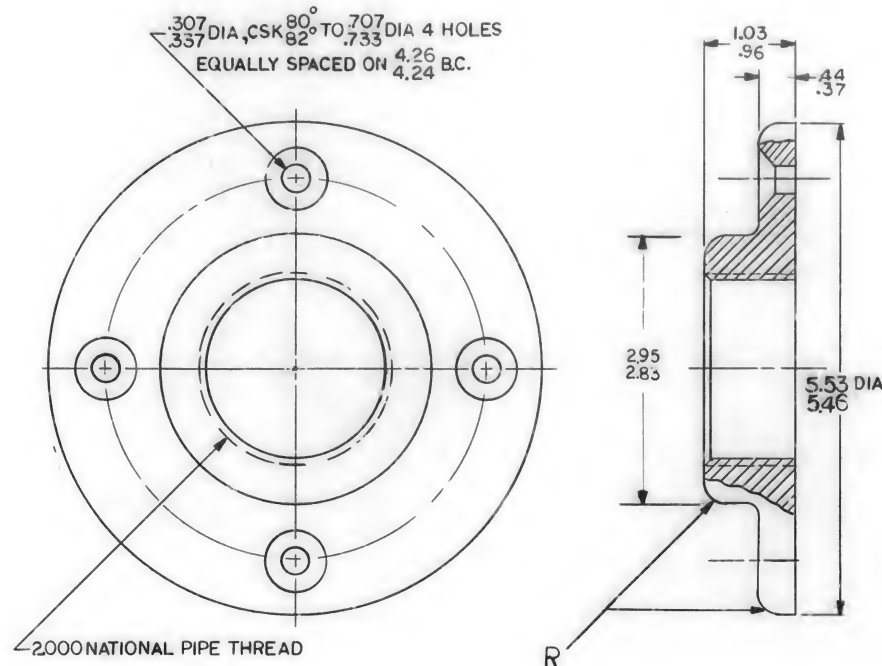
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404 CLASS 3.
- MARKING: UNIT PACKAGES AND SHIPPING CONTAINERS SHALL BE MARKED INTERNALLY AND EXTERNALLY PER MIL-STD-129 WITH THE MANUFACTURER'S NAME, NASA DRAWING NUMBER AND REVISION LETTER, LOT OR SERIAL NUMBER AND DATE OF MANUFACTURE.

2. ACCEPTANCE AND INSPECTION:

- DIMENSIONS: AS SPECIFIED HEREIN.
- A CERTIFICATE OF COMPLIANCE WITH THE MATERIAL AND FINISH REQUIREMENTS SHALL ACCOMPANY EACH SHIPMENT.

3. DESIGN:

- MATERIAL AND FINISH: MALLEABLE IRON WITH A HOT ZINC DIP FINISH (GALVANIZED) PER FEDERAL SPECIFICATION QQ-I-666C.



FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 11460 DATE 8/12/64

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| | | |
|-----------|----------|---|
| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON |
| FRACTIONS | DECIMALS | ANGLES |
| ± | ± | ± |
| | | DO NOT SCALE THIS DRAWING |
| | | MATERIAL |
| | | SEE NOTE |
| | | HEAT TREATMENT |
| NEXT ASSY | USED ON | FINAL FINISH |
| | | SEE NOTE |
| | | APPLICATION |

| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND NO |
|--|-------------------------|--|---------|
| LIST OF MATERIALS | | | |
| RAYTHEON CO. LEXINGTON, MASS CONTRACT NO. NAS 9-498 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN S. J. D. 10/1/64 CHECKED J. H. K. 2/10/64 APPROVAL J. H. K. 2/10/64 APPROVAL J. H. K. 2/10/64 | | FLOOR FLANGE, ROUND | |
| NASA APPROVAL J. H. K. 2/10/64 MIT APPROVAL J. H. K. 2/10/64 MIT APPROVAL J. H. K. 2/10/64 | | SPECIFICATION CONTROL DRAWING | |
| CODE IDENT NO. C | | NASA DRAWING NO. 1006243 | |
| SCALE NONE | | SHEET 1 OF 1 | |

1006243

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO

| SYM | DESCRIPTION | DATE | APPROVED |
|-----|---|--------|----------------|
| - | CLASS B RELEASE PER TDRR 11/29/97 | | |
| A | UPGRADE TO CLASS A WITH CHANGE PER TDRR 17511 DR. <i>David</i> CHK w/ <i>Baron</i> & <i>APPD</i> & <i>examined</i> | 4/1/05 | <i>11/2/05</i> |

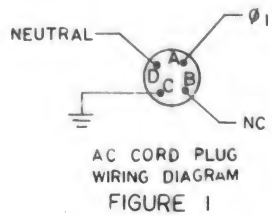
| | | | | |
|--|----------------------------|--|-----------|----------------------------|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | | FIND NO |
| LIST OF MATERIALS | | | | |
| RAYTHEON LEXINGTON, MASS CONTRACT NO. NAS 9-498 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | |
| DRAWN <i>S.T. DeLoach</i> CHECKED <i>S.T. DeLoach</i> APPROVAL <i>S.T. DeLoach</i> APPROVAL <i>S.T. DeLoach</i> APPROVAL <i>S.T. DeLoach</i> | | OHMMETER, DIGITAL SPECIFICATION CONTROL DRAWING | | |
| NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i> | | CODE IDENT NO. _____ | SIZE C | NASA DRAWING NO 1006244 |
| SCALE | | NONE | WT | SHEET OF 2 |

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

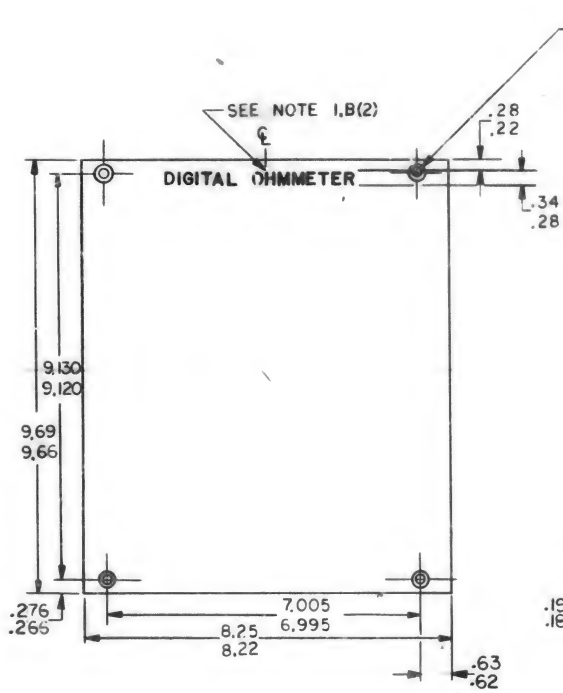
1006244

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY DISCLAIMS ANY RESPONSIBILITY FOR ANY OMISSIONS, MISSTATEMENTS, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE ASSUMED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, SELL, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

| REVISIONS | | | |
|-----------|---|--------|--------------------|
| SYM | DESCRIPTION | DATE | APPROVED |
| - | CLASS B RELEASE PER TDR# 11297 | | |
| A | UPGRADE TO CLASS A WITH CHANGE PER TDRR 17511 DR <i>[Signature]</i> CHK'd <i>[Signature]</i> 4-8-65 APP'D <i>[Signature]</i> | 4-8-65 | <i>[Signature]</i> |

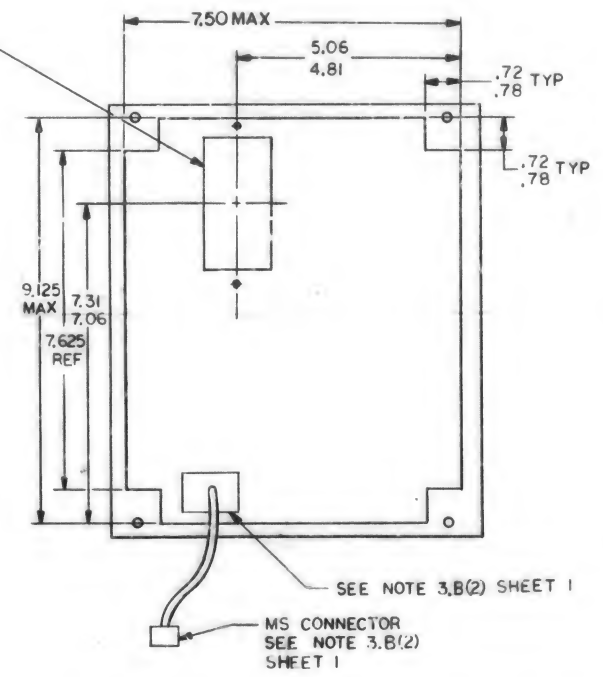
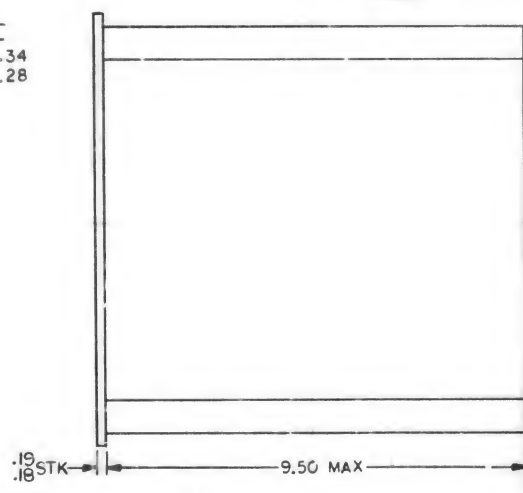


AC CORD PLUG
WIRING DIAGRAM
FIGURE 1



.213 DIA,
.221 DIA
CSK 80° TO .392 DIA
84° TO .412 DIA
4 PLACES

CONNECTOR
SEE NOTE 3,B(3)
SHEET 1



1006244

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-C-70327

| | |
|---|-----------------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON | |
| FRACTIONS | DECIMALS ANGLES |
| ± | ± ± |
| DO NOT SCALE THIS DRAWING | |
| MATERIAL | |
| SEE NOTE | |
| HEAT TREATMENT | |
| FINAL FINISH | |
| SEE NOTE | |
| NEXT ASSY | USED ON |
| APPLICATION | |

| | | | |
|--|------------------------|--|----------------------------|
| QTY REQD | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION | FIND NO |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. NAS 9-498 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN <i>[Signature]</i> DATE 22 JUN 65 CHECKED <i>[Signature]</i> DATE 27 JUN 65 APPROVAL <i>[Signature]</i> DATE 27 JUN 65 APPROVAL <i>[Signature]</i> DATE 27 JUN 65 | | OHMMETER, DIGITAL SPECIFICATION CONTROL DRAWING | |
| NASA APPROVAL <i>[Signature]</i> DATE 5/9/65 MIT APPROVAL <i>[Signature]</i> DATE 4/6/65 MIT APPROVAL <i>[Signature]</i> DATE 7/30/65 | | CODE IDENT NO C | NASA DRAWING NO 1006244 |
| SCALE NONE | | WT | SHEET 2 OF 2 |

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REQUIREMENTS:

1. GENERAL:

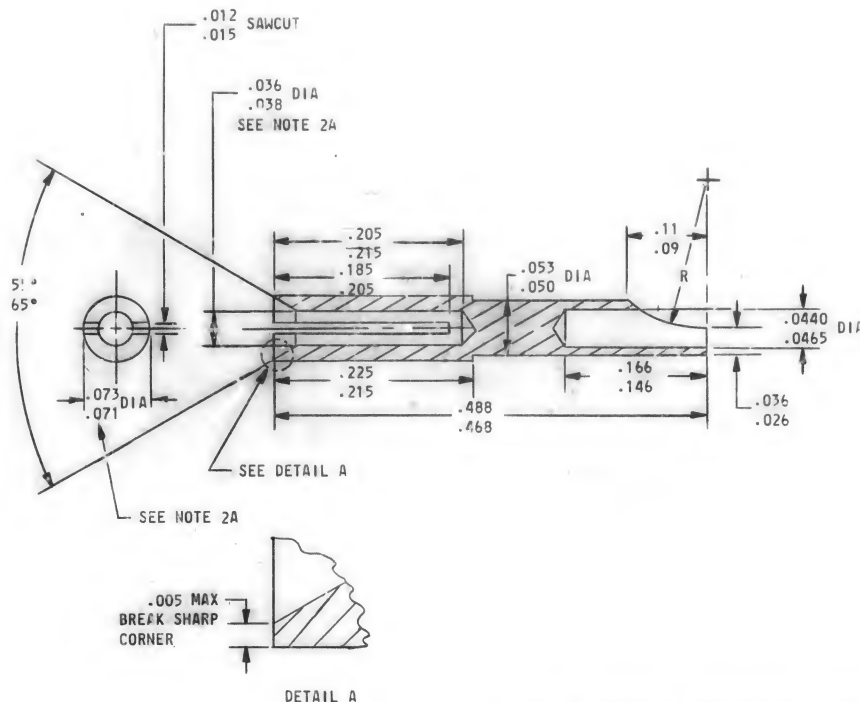
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
- MARKING: UNIT PACKAGES AND SHIPPING CONTAINERS SHALL BE MARKED INTERNALLY AND EXTERNALLY, IN ACCORDANCE WITH MIL-STD-129, WITH THE MANUFACTURER'S NAME, PART NUMBER, LOT NUMBER OR CODE, AND NASA PART NUMBER (DRAWING NUMBER, REVISION LETTER AND DASH NUMBER).

2. ACCEPTANCE AND INSPECTION:

- DIMENSIONS: AS DELINEATED HEREIN WHEN A SQUARE GAGE PIN OF .0262 ACROSS FLATS IS INSERTED INTO THE CRIMPED HOLE. A ROUND GAGE PIN OF .037 DIAMETER MAY BE USED AS AN EQUIVALENT.
- PIN RETENTION: THESE CONTACTS SHALL BE CRIMPED AS SHOWN SO THAT A SQUARE PIN .023 ACROSS FLATS (.0335 DIA REF) SHALL BE RETAINED AND A PIN .027 ACROSS FLATS (.0382 DIA REF) SHALL NOT CAUSE PERMANENT DEFORMATION.
- CERTIFICATION: A CERTIFICATE OF COMPLIANCE WITH THE MATERIAL AND FINISH REQUIREMENTS SHALL ACCOMPANY EACH SHIPMENT.

3. DESIGN:

- MATERIALS: PHOSPHOR BRONZE PER QQ-P-330, COMPOSITION A, SPRING TEMPER.
- FINISH: 30 MILLIONTHS MINIMUM HARD GOLD PLATE PER MIL-G-45204, TYPE II OVER 200-300 MILLIONTHS OF SILVER PLATE PER QQ-S-365.
- BURRS AND SHARP EDGES: REMOVE BURRS AND SHARP EDGES ALL OVER.



FOR INFORMATION ONLY

CLASS B RELEASE TDRR NO. 13151 DATE 9/30/64

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| | | | |
|--|-------------------------|--|--------------|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FINI NC. |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. FND-12775 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN BY <i>[Signature]</i> DATE <i>18 SEP 64</i> | | CONTACT, ELECTRICAL, FEMALE | |
| CHECKED BY <i>[Signature]</i> DATE <i>21 SEP 64</i> | | SPECIFICATION CONTROL DRAWING | |
| APPROVAL BY <i>[Signature]</i> DATE <i>21 SEP 64</i> | | NASA DRAWING NO. 1006248 | |
| APPROVAL BY <i>[Signature]</i> DATE <i>21 SEP 64</i> | | CODE IDENT NO. | SIZE |
| NASA APPROVAL <i>[Signature]</i> DATE <i>21 SEP 64</i> | | C | C |
| MIT APPROVAL <i>[Signature]</i> DATE <i>9/1/64</i> | | SCALE | WT |
| MIT APPROVAL <i>[Signature]</i> DATE <i>9/1/64</i> | | NONE | SHEET 1 OF 1 |

| | |
|---|-------------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± | SEE NOTE |
| DO NOT SCALE THIS DRAWING MATERIAL | SEE NOTE |
| HEAT TREATMENT | SEE NOTE |
| FINAL FINISH | SEE NOTE |
| NEXT ASSY USED ON | APPLICATION |

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED AS IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
- B. MARKING: UNIT PACKAGES AND SHIPPING CONTAINERS SHALL BE MARKED INTERNALLY AND EXTERNALLY, IN ACCORDANCE WITH MIL-STD-129, WITH THE MANUFACTURER'S NAME, PART NUMBER, LOT CODE OR NUMBER, AND NASA PART NUMBER (DRAWING NUMBER, REVISION LETTER, AND DASH NUMBER).

2. ACCEPTANCE AND INSPECTION:

- A. DIMENSIONS: AS DELINEATED
- B. GEOMETRY: IN GENERAL, ALL FEATURES OF THE PART SHALL BE SYMMETRICAL AND FULLY FORMED. THE HOLDING RING, THE CLINCHING RING, AND THE ANTI-ROTATE SERPENTINE RING SHALL BE CONCENTRIC WITH THE TAPPED HOLE AND WITH EACH OTHER WITHIN 0.005 TIR. A PLANE PASSING THRU THE PERIPHERAL EDGE OF ANY OF THESE RINGS SHALL BE SQUARE WITH THE AXIAL CENTERLINE OF THE THREAD AND PARALLEL WITH SURFACE D WITHIN (1°) ONE DEGREE TIR.
- C. CERTIFICATION: A CERTIFICATION OF COMPLIANCE WITH THE MINIMUM HARDNESS AND ELECTROPLATED FINISH DESIGN REQUIREMENTS SHALL ACCOMPANY EACH SHIPMENT.

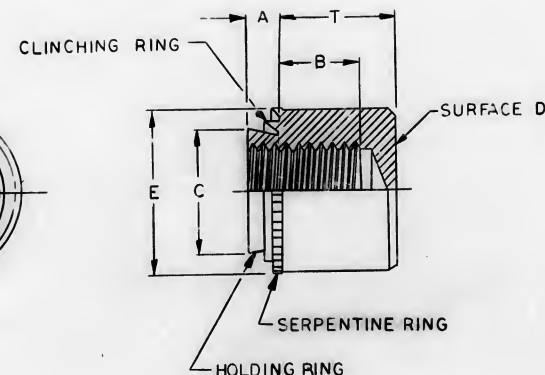
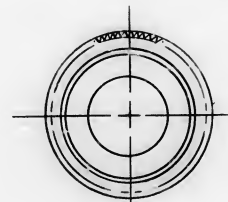
3. DESIGN:

- A. MATERIAL & HARDNESS: THE BASE MATERIAL SHALL BE A CARBON STEEL, HEAT TREATED OR OTHERWISE HARDENED (WORK OR CASE HARDENED) SO THAT THE PARTS MAY BE INSTALLED IN ALMOST ANY MATERIAL HAVING A HARDNESS EQUAL TO OR LESS THAN ROCKWELL B85. NOTE: MAGNESIUM IS SPECIFICALLY EXCLUDED AS A MOUNTING MATERIAL.
- INSTALLATION SHALL MEAN APPLICATION OF A NORMAL STEADY PRESSURE TO SURFACE D, WITH THE HOLDING RING STARTED INTO A RECOMMENDED MOUNTING HOLE, SUFFICIENT TO FORCE THE SERPENTINE RING JUST BELOW THE MOUNTING SURFACE. PROPERLY INSTALLED, THE NUT SHALL WITHSTAND AN AXIAL PUSHOUT FORCE EQUAL TO 50% OF THE INSTALLING FORCE AND A TORQUE SUFFICIENT TO STRIP THE NUT THREADS WITHOUT PUSHING OR TURNING LOOSE IN THE MOUNTING SHEET.
- B. FINISH: CADMIUM ELECTROPLATE PLUS A CHROMATE CONVERSION COATING PER QQ-P-416, TYPE II, CLASS 3.

| REVISIONS | | | |
|-----------|--------------------------------|----------|----------|
| SYM | DESCRIPTION | DATE | APPROVED |
| - | CLASS B RELEASE PER TDRR 13690 | 10/12/64 | TH |

TABLE I

| DASH NO. | THREAD SIZE | DIMENSIONS | | | | | | | MINIMUM DISTANCE ϕ HOLE TO EDGE OF SHEET |
|----------------------|-------------------------|----------------------|-----------------------------------|-------|--------------------------------|--------------------|-------------|-------------|---|
| | | A MAX | FOR SHEET THICKNESS | C MAX | MOUNTING HOLE $\pm .003$ -.000 | E $\pm .015$ -.005 | T $\pm .03$ | B $\pm .03$ | |
| -001 -002 -003 | NO. 4 (.112)-40 UNC-2B | .038 .054 .087 | .040-.055 .056-.090 .091-UP | .164 | .166 | .250 | .38 | .19 | .19 |
| -004 -005 -006 | NO. 6 (.138)-32 UNC-2B | .038 .054 .087 | .040-.055 .056-.090 .091-UP | .185 | .188 | .312 | .38 | .19 | .22 |
| -007 -008 -009 | NO. 8 (.164)-32 UNC-2B | .038 .054 .087 | .040-.055 .056-.090 .091-UP | .210 | .213 | .344 | .44 | .25 | .26 |
| -010 -011 -012 | NO. 10 (.190)-24 UNC-2B | .038 .054 .087 | .040-.055 .056-.090 .091-UP | .247 | .250 | .375 | .44 | .25 | .28 |
| -013 -014 -015 | NO. 10 (.190)-32 UNF-2B | .038 .054 .087 | .040-.055 .056-.090 .091-UP | .247 | .250 | .375 | .44 | .25 | .28 |
| -016 -017 -018 | .250-20UNC-2B | .054 .087 .120 | .056-.090 .091-1.24 .125-UP | .342 | .344 | .500 | .56 | .31 | .34 |



FOR INFORMATION ONLY
CLASS B RELEASE TDRR NO. 13690 DATE

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| | | | |
|-------------|--|---------|---|
| | | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON |
| | | | FRACTIONS DECIMALS ANGLES |
| | | | ± ± ± |
| | | | DO NOT SCALE THIS DRAWING MATERIAL |
| | | | SEE NOTE |
| | | | HEAT TREATMENT |
| | | | SEE NOTE |
| NEXT ASSY | | USED ON | FINAL FINISH |
| | | | SEE NOTE |
| APPLICATION | | | |

| | | | |
|--|-------------------------|--|---------|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND NO |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. FNP-12775 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN <i>ELI VONES</i> DATE <i>8/22/64</i> | | | |
| CHECKED <i>John Collins</i> DATE <i>8/22/64</i> | | | |
| APPROVAL <i>R. G. Smith</i> DATE <i>10/14/64</i> | | | |
| APPROVAL <i>Q. G. Smith</i> DATE <i>10/12/64</i> | | | |
| APPROVAL <i>287 B</i> | | | |
| NASA APPROVAL <i>C. C. Smith</i> DATE <i>10/14/64</i> | | NASA DR-WING NO. | |
| MIT APPROVAL <i>C. C. Smith</i> DATE <i>10/14/64</i> | | MIT APPROVAL <i>C. C. Smith</i> DATE <i>10/14/64</i> | |
| SPECIFICATION CONTROL DRAWING | | NUT, PLAIN, SELF CLINCHING, CAP | |
| CODE IDENT NO. | SIZE | SCALE NONE | |
| | C | WT | |
| SHEET 1 OF 1 | | 1006249 | |

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSES THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERS ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

9929001

ANY USE OF THIS DOCUMENT FOR OTHER THAN GOVERNMENTAL PURPOSES IS SUBJECT TO PRIOR WRITTEN CONSENT OF RAYTHEON CO.

REVISIONS

| SYM | DESCRIPTION | DATE | APPROVED |
|-----|--------------------------------|---------|----------|
| - | CLASS B RELEASE PER TDRR 15088 | 1/16/64 | W.K. |

REQUIREMENTS:

1. GENERAL:

- A. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
- B. PREPARATION FOR DELIVERY SHALL BE IN ACCORDANCE WITH ND 1002215, CLASS I.
- (1) SHIPPING CONTAINERS SHALL BE MARKED IN ACCORDANCE WITH PARAGRAPHS 3.5.1 & 3.5.2 OF ND 1002215.

2. ACCEPTANCE AND INSPECTION:

- A. VENDOR SUPPLIED DATA: EACH SHIPMENT OF PARTS SHALL BE ACCOMPANIED BY THE FOLLOWING DOCUMENTATION.
- (1) CERTIFICATE OF COMPLIANCE WITH ND 1015404, CLASS 3.
- (2) CERTIFICATE OF COMPLIANCE WITH DESIGN REQUIREMENTS.

3. DESIGN:

- A. APPLIED LIFE: INDEFINITE WHEN APPLIED TO RIGID POLYVINYL CHLORIDE SHEET AND PROPERLY DRIED. THERE SHALL BE NO FADING, CRACKING, FLAKING OR SMEARING WHEN EXPOSED TO TEMPERATURES BELOW +120°F AND RELATIVE HUMIDITY BELOW 95%.
- B. STORAGE LIFE: 3 YEARS MINIMUM WHEN STORED IN TIGHTLY CLOSED ORIGINAL CONTAINERS AT TEMPERATURES BELOW 80°F.
- C. PHYSICAL PROPERTIES:
- (1) SPECIFIC GRAVITY: 0.8580 AT 20°C.
- (2) VISCOSITY: 15-20 CENTIPOISES AT 20°C USING A BROOKFIELD VISCOMETER AT 60 RPM WITH SPINDLE NO. 1.
- (3) SOLIDS CONTENT: 20.5% NOMINAL
- (4) RESINS: 7.7% NOMINAL
- (5) COLORS: OPAQUE COLORS IN ACCORDANCE WITH TABLE I.
- (6) DRYING TIME: 30 SECONDS MAXIMUM AT 75°F AND 50% RELATIVE HUMIDITY. ULTIMATE HARDNESS WILL BE ACHIEVED IN APPROXIMATELY 4 HOURS WHICH WILL ASSURE WATERPROOF QUALITIES.

TABLE I

| DASH NO. | COLOR |
|----------|--------|
| -001 | BLACK |
| -002 | BROWN |
| -003 | RED |
| -004 | ORANGE |
| -005 | YELLOW |
| -006 | GREEN |
| -007 | BLUE |
| -008 | PURPLE |

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327

| | | |
|-------------|---------|---|
| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON |
| | | FRACTIONS DECIMALS ANGLES ± ± ± |
| | | DO NOT SCALE THIS DRAWING MATERIAL |
| | | NONE |
| | | HEAT TREATMENT |
| | | NONE |
| | | FINAL FINISH |
| | | NONE |
| NEXT ASSY | USED ON | |
| APPLICATION | | |

| | | | |
|--|-------------------------|---|---|
| QTY REQD | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | FIND NO. |
| LIST OF MATERIALS | | | |
| RAYTHEON CO LEXINGTON, MASS CONTRACT NO. FNP-12775 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DRAWN <i>R.T. Doolittle</i> CHECKED <i>R.T. Doolittle</i> APPROVAL <i>R.T. Doolittle</i> APPROVAL <i>R.T. Doolittle</i> | | INK, MARKING SPECIFICATION CONTROL DRAWING | |
| NASA APPROVAL <i>W.R. King</i> MIT APPROVAL <i>W.R. King</i> MIT APPROVAL <i>C. S. Saling</i> | | CODE IDENT NO. C SCALE NONE WT | NASA DRAWING NO 1006256 SHEET 1 OF 1 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|-----|-------------------------|----------|-----------|----------|------|-------------------------|-------------------------|-----------|----------|----------|-----------|-------------------------|-------------------------|-----------|-----------|----------|------|------------------------|-------------|----------|------|----------|-----------|-----|-------------|----------|------|----------|--|--|--|--|--|--|-----------|--|--|--|--|--|--|--|--|--|--|--|
| 8 | | | | 7 | | | | 6 | | | | 5 | | | | 4 | | | | 3 | | | | 2 | | | | 1 | | | | | | | | | | | | | | | | | | | |
| REVISIONS | | | | | | | | | | | | REVISIONS | | | | | | | | | | | | REVISIONS | | | | | | | | | | | | REVISIONS | | | | | | | | | | | |
| ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED | ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED | ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED | ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED | ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED | | | | | | | | | | | | | | | | | | |
| | BY | REVISION STATUS CHANGED | | 15 SEP 67 | ✓ | BT | REVISION STATUS CHANGED | | 28 AUG 67 | ✓ | ✓ | BM | REVISION STATUS CHANGED | | 28 AUG 67 | ✓ | ✓ | F | REVISION FREELACES | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | BZ | REVISION STATUS CHANGED | | 20 SEP 67 | ✓ | BV | REVISION STATUS CHANGED | | 28 AUG 67 | ✓ | ✓ | BN | REVISION STATUS CHANGED | | 28 AUG 67 | ✓ | ✓ | G | REVISED PER TDRR 25196 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | BW | REVISIED PER TDRR 34374 | | 30 AUG 67 | ✓ | ✓ | BP | REVISION STATUS CHANGED | | 28 AUG 67 | ✓ | ✓ | H | REVISED PER TDRR 25358 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | 1 SEP 67 | ✓ | ✓ | BR | REVISION STATUS CHANGED | | 21 AUG 67 | ✓ | ✓ | J | REVISED PER TDRR 25469 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | BW | REVISION STATUS CHANGED | | 1 SEP 67 | ✓ | ✓ | BS | REVISION STATUS CHANGED | | 21 AUG 67 | ✓ | ✓ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B. NO. (REF) | AUTHORIZATION | P/N MOD. (REF) | RFK NO. | NEW P/N (REF) | S/N |
|----------|---|--------------------------------------|------------------|---------------|----------------|---------|-------------------|---|
| 1.0 | ELIMINATE SHIFT OF SWITCHES AFTER ALIGNMENT | SEXTANT HAND CONTROLLER | 1021245 | MA-52 | 1014558-011 | 1021203 | 1014558-011 | 1, 2, 3 |
| 2.0 | ADDITION OF SIGNAL CONDITIONER POWER SUPPLY | | | ECP-25 | | 8102602 | | |
| 2.1 | | POWER & SERVO ASSY | 0102600 | | 1007100 | 8102601 | 1007257-011 | GEN 6 |
| 2.2 | | POWER & SERVO ASSY | 0102600 | | 1021207-011 | 8102600 | 1007257-031 | GEN 20 |
| 2.3 | | POWER & SERVO ASSY | 0102600 | ECP-25 | 1007400-011 | 8102600 | 1007257-041 | GEN 11, 12 |
| 3.0 | MOISTURE-PROOFING G&N 20 | | | | | 8102613 | | GEN 20 |
| 3.1 | | COUPLING DISPLAY UNIT | 0102601 | ECP-20 | 1015500-011 | 8102608 | 1015500-021 | 39, 44, 45, 46, 47 |
| 3.2 | | DAC GROUP | | | 1014513-011 | 8102604 | 1014513-021 | S/N 6 |
| 3.3 | | OPTICAL UNIT ASSY | 0102601 | ECP-20 | 1011000-002 | 8102615 | 1011000-002 MOD 1 | S/N 9 |
| 4.0 | CHANGE TO TEFLON AND MILNE WIRE | | | | | 8102611 | | GEN 20 |
| 4.1 | | G&N HARNESS & END CONNECTOR | 0102603 | ECP-63 | 1014606-011 | 8102607 | 1014606-031 | SPARE |
| 4.2 | | G&N INDICATOR CONTROL PANEL ASSY | | | 1014578-021 | 8102606 | 1014578-041 | SPARE |
| 4.3 | | IMU CONTROL PANEL ASSY | 0102603 | ECP-63 | 1014526-011 | 8102605 | 1014526-031 | SPARE |
| 5.0 | CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY | | | | | 8102622 | | |
| 5.1 | | NAV. BASE & OPTICAL UNIT ASSY | 0102609 | ECP-130 | | | 1899950-031 | GEN 8 |
| 5.2 | | | | | | | 1899950-041 | GEN 20 |
| 5.3 | | | | | | | 1899950-051 | GEN 17, 12 |
| 6.0 | CHANGE FROM 40 TO 100 SECOND TIME DELAY | D&C ELECTRONICS | 0102607 | ECP-137 | 1015065-011 | 8102620 | 1015065-031 | GEN 17, 12 |
| 7.0 | MOISTURE SEALING | COUPLING DISPLAY ASSY | 0102620 | ECP-267 | 1016903-031 | 8102637 | 1021304-011 | GEN 10, 11, 12 THRU 124, 100 SPARES |
| 8.0 | BLOWER MOTOR RESISTOR | IMU | 0102627 | ECP-230 | 1001500-011 | 8102621 | 1001500-041 | GEN 17, 12, 50 SPARE |
| | | | | | 1001500-021 | | 1001500-051 | GEN 109, 110, 111 |
| | | | | | 1001500-031 | | 1001500-061 | GEN 12 THRU 124, 100 SPARES |
| 9.0 | RETROFIT KIT FOR ECP 165 | IMU CONTROL PANEL ASSY | 0102613 | ECP-165 | 1015095-011 | 8102627 | 1014628-011 | 12 SPARE |
| 10.0 | RETROFIT KIT FOR ECP 246 | D&C ELECTRONICS ASSY | 0102612 | ECP-246 | 1015065-031 | 8102624 | 1015065-051 | 17, 12, 110 THRU 124 |
| | | | | | 1015065-041 | 8102626 | 1015065-061 | 12, SPARE 110 THRU 124, SPARE |
| 11.0 | ADD SOLID PIN IN CAM & KNOB | G&N INDICATOR CONTROL PANEL ASSY | 0102615 | ECP-240 | 1015048-011 | 8102629 | 1015048-031 | 17, SPARE 110 THRU 124, SPARE |
| 12.0 | GEN 17 QUAL. RETROFITS | GEN SYSTEM | 0102630 | ECP-251 | | 8102648 | | 17 |
| 12.1 | | CDU FRAMES & PANEL ASSY | 0102621 | ECP-251 | 1016903-021 | 8102645 | 1016903-051 | |
| 12.2 | | POWER & SERVO ASSY | 0102616 | ECP-251, 84R | 1007257-041 | 8102631 | 1007257-051 | |
| 13.0 | REPLACE PANEL MOUNTING SCREWS | GEN SYS. | 0102625 | ECP-265 | | 8102644 | | |
| 13.1 | | GEN IND. CON. PANEL | 0102625 | ECP-265, 277 | 1015053-011 | 8102643 | 1015053-021 | GEN 12 "50" SPARE |
| 13.2 | | GEN IND. CON. PANEL | 0102623 | ECP-163 & 265 | 1014644-011 | 8102638 | 1014644-021 | 110, 111, 12 THRU 124, 100 SPARES GEN 12 |
| 13.3 | | OPTICS SHROUD | 0102623 | ECP-265 | 1014628-011 | 8102639 | 1014628-021 | 50SP 110 THRU 124, 100 SPARES GEN 12 |
| 13.4 | | | 0102623 | ECP-265 | 1014502-011 | 8102642 | 1014502-021 | 50SP 110, 121 THRU 124, 100 SPARES GEN 12 |
| 13.5 | | D&C ELECTRONICS | 0102623 | ECP-265 | 1015065-051 | 8102640 | 1015065-081 | GEN 12 "50" SPARE |
| | | | | | -051 | | -081 | GEN 110 |
| | | | | | -071 | | -101 | GEN 111, 121 THRU 124, 100 SPARES |
| | | | | | -061 | | -091 | GEN 12 "50" SPARE |
| 14.0 | ADD HORIZONTAL HANDLES TO THE GEN INDICATOR CONTROL PANEL | GEN IND. CONT. PANEL | 0102625 | ECP-277 | | | | |
| 15.0 | BOLT PLATING CHANGED FROM CAD. TO NI. | NAV BASE & OPTICAL UNIT ASSEMBLY | 0102610 | ECP-211 | | 8102624 | | |
| 15.1 | | | | | 1899950-041 | | 1899950-121 | GEN 20 |
| 15.2 | | | | | 1899950-051 | | 1899950-031 | GEN 12 & SPARE |
| 15.3 | | | | | 1899950-071 | | 1899950-101 | GEN 111, 109, & SPARE |
| 15.4 | | | | | 1899950-061 | | 1899950-131 | GEN 121 |
| 15.5 | | | | | 1899950-081 | | 1899950-141 | GEN 122 |
| 16.0 | BRIGHTNESS POT CAM REPLACEMENT | GEN INDICATOR CONTROL PANEL ASSEMBLY | 0102629 | ECP-243 | 1014664-011 | 8102647 | 1014664-021 | 110, 111, 121 THRU 124 AND SPARES |

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B. NO. (REF) | AUTHORIZATION | P/N MOD. (REF) | RFK NO. | NEW P/N (REF) | S/N |
|----------|-------------------------|----------|------------------|---------------|----------------|---------|---------------|-----|
| F | REVISION FRAMES | | | | | | | |
| G | REVISED PER TDRR 25186 | | | | | | | |
| H | REVISED PER TDRR 25358 | | | | | | | |
| J | REVISED PER TDRR 25469 | | | | | | | |
| K | REVISED PER TDRR 26141 | | | | | | | |
| L | REVISED PER TDRR 26434 | | | | | | | |
| M | REVISED PER TDRR 26436 | | | | | | | |
| N | REVISED PER TDRR 26513 | | | | | | | |
| P | REVISED PER TDRR 26570 | | | | | | | |
| R | REVISION STATUS CHANGED | | | | | | | |
| S | REVISION STATUS CHANGED | | | | | | | |
| T | REVISION STATUS CHANGED | | | | | | | |
| U | REVISION STATUS CHANGED | | | | | | | |
| V | REVISION STATUS CHANGED | | | | | | | |
| W | REVISION STATUS CHANGED | | | | | | | |
| Y | REVISION STATUS CHANGED | | | | | | | |
| Z | REVISED PER TDRR 28808 | | | | | | | |
| AA | REVISION STATUS CHANGED | | | | | | | |
| AB | REVISION STATUS CHANGED | | | | | | | |
| AC | REVISION STATUS CHANGED | | | | | | | |
| AD | REVISION STATUS CHANGED | | | | | | | |
| AE | REVISION STATUS CHANGED | | | | | | | |
| AF | REVISION STATUS CHANGED | | | | | | | |
| AG | REVISION STATUS CHANGED | | | | | | | |
| AH | REVISION STATUS CHANGED | | | | | | | |
| AJ | REVISION STATUS CHANGED | | | | | | | |
| AK | REVISION STATUS CHANGED | | | | | | | |
| AL | REVISION STATUS CHANGED | | | | | | | |
| AM | REVISION STATUS CHANGED | | | | | | | |
| AN | REVISION STATUS CHANGED | | | | | | | |
| AP | REVISION STATUS CHANGED | | | | | | | |
| AR | REVISION STATUS CHANGED | | | | | | | |
| AS | REVISION STATUS CHANGED | | | | | | | |
| AT | REVISION STATUS CHANGED | | | | | | | |
| AU | REVISED PER TDRR 26530 | | | | | | | |
| AV | REVISION STATUS CHANGED | | | | | | | |
| AW | REVISION STATUS CHANGED | | | | | | | |
| AY | REVISION STATUS CHANGED | | | | | | | |
| AZ | REVISION STATUS CHANGED | | | | | | | |
| BA | REVISION STATUS CHANGED | | | | | | | |
| BB | REVISION STATUS CHANGED | | | | | | | |
| BC | REVISION STATUS CHANGED | | | | | | | |
| BD | REVISION STATUS CHANGED | | | | | | | |
| BE | REVISION STATUS CHANGED | | | | | | | |
| BF | REVISION STATUS CHANGED | | | | | | | |
| BG | REVISION STATUS CHANGED | | | | | | | |
| BH | REVISION STATUS CHANGED | | | | | | | |
| BI | REVISION STATUS CHANGED | | | | | | | |
| BK | REVISION STATUS CHANGED | | | | | | | |
| BL | REVISION STATUS CHANGED | | | | | | | |

NOTES:
1. ITEM NUMBERS HAVING ANY OTHER NUMBER THAN ZERO ("0") AS THE FIRST DECIMAL ARE LISTED FOR REFERENCE ONLY.

| | | | | | |
|--|--|--|--|---|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON 2 PLACE 3 PLACE DECIMALS DECIMALS ANGLES + + + - - - | | AC ELECTRONICS DIVISION GENERAL INVESTIGATIVE DIVISION DRAWN: <i>Spil</i> DATE: <i>6 DEC 63</i> CHECKED: <i>Spil</i> APPROVAL: <i>Spil</i> CONTRACT NAS 9-97 <i>W</i> | | MANAGED SPACECRAFT CENTER HOUSTON TEXAS MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS) | |
| DO NOT SCALE THIS DRAWING | | MATERIAL: <i>ND1000000</i> | | NASA APPROVAL: <i>Spil</i> | |
| NEXT ASSY: <i>AP</i> | | USED ON: <i>AP</i> | | APPROVAL: <i>Spil</i> | |
| SIZE: <i>D</i> | | CODE: <i>99974</i> | | IDENT NO: <i>1021200</i> | |
| SCALE: <i>1/8" = 1"</i> | | CHECK: <i>1/8" = 1"</i> | | CHECK: <i>1/8" = 1"</i> | |

| REVISIONS | | | | | | | | | | REVISIONS | | | | | | | | | | | |
|-----------|--|--|--------------------|----------------------------------|----------------|-------------------------|---------------|--|----------|---------------|-------------------------|---|----------|-------------|----------|-------------------------|----------|---|----------|--------|----------|
| ZONE LTR | | DESCRIPTION | | DATE APPROVED | | ZONE LTR | | DESCRIPTION | | DATE APPROVED | | ZONE LTR | | DESCRIPTION | | DATE APPROVED | | | | | |
| BY | REVISION STATUS CHANGED | CHG. NO. | DATE | APPROVED | BY | REVISION STATUS CHANGED | CHG. NO. | DATE | APPROVED | BY | REVISION STATUS CHANGED | CHG. NO. | DATE | APPROVED | BY | REVISION STATUS CHANGED | CHG. NO. | DATE | APPROVED | | |
| BZ | REVISION STATUS CHANGED | | | | BW | REVISION STATUS CHANGED | | | | 67 | REVISION STATUS CHANGED | | | | 66 | REVISION STATUS CHANGED | | | | | |
| ITEM NO. | DESCRIPTION | END ITEM | R. I. B. NO. (REF) | AUTHORIZATION ECP. NO. OR S.O.W. | P/N MOD. (REF) | RFK NO. | NEW P/N (REF) | S/N | | ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED | ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED |
| 17.0 | ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM - BLOCK 1 SERIES 50. | G&N SYSTEM | | ECP 169 | | 8102630 | | | | P | P | REVISED PER TDRR 26570 THIS SHEET ADDED | 66 | 8/1/51 | 1/1 | P | P | REVISED PER TDRR 26570 THIS SHEET ADDED | 66 | 8/1/51 | 1/1 |
| 17.1 | | EYEPIECE STOWAGE | 0102624 | ECP 169 | | 8102623 | 1021255-011 | G&N 12 "50" SPARE G&N 20 | | R | R | REVISED PER TDRR-26663 | 66 | 8/1/51 | 1/1 | R | R | REVISED PER TDRR-26663 | 66 | 8/1/51 | 1/1 |
| 17.2 | | G&N INDICATOR CONTROL PANEL | 0102622 | ECP 169 | 1015053-011 | 8102643 | 1015053-021 | G&N 12 "50" SPARE | | S | S | REVISED PER TDRR 26819 | 66 | 8/1/51 | 1/1 | S | S | REVISED PER TDRR 26819 | 66 | 8/1/51 | 1/1 |
| 18.0 | ADD EYEPIECE STOWAGE UNIT TO G&N SYSTEM - BLOCK 1 SERIES 100 | G&N SYSTEM | 0102622 | ECP 169 | 1014578-041 | 8102641 | 1014578-041 | G&N 20 | | T | T | REVISED PER TDRR 27452 | 66 | 8/1/51 | 1/1 | T | T | REVISED PER TDRR 27452 | 66 | 8/1/51 | 1/1 |
| 18.1 | | EYEPIECE STOWAGE | 0102624 | ECP 169 | | 8102632 | 1021255-021 | G&N 110, 111, 121, 122, 123, 124 100 SPARES | | U | U | REVISED PER TDRR 27457 | 66 | 8/1/51 | 1/1 | U | U | REVISED PER TDRR 27457 | 66 | 8/1/51 | 1/1 |
| 18.2 | | G&N INDICATOR CONTROL PANEL | 0102622 | ECP 169 | 1014664-011 | 8102633 | 1014664-021 | G&N 110, 111, 121, 122, 123, 124 100 SPARES | | V | V | REVISED PER TDRR 27825 | 66 | 8/1/51 | 1/1 | V | V | REVISED PER TDRR 27825 | 66 | 8/1/51 | 1/1 |
| 19.0 | G&N QUAL RETROFITS | G&N SYSTEM | 0102624 | ECP 250, 253, 249, 268, 266 | | 8102649 | | | | W | W | REVISED PER TDRR 27840 | 66 | 8/1/51 | 1/1 | W | W | REVISED PER TDRR 27840 | 66 | 8/1/51 | 1/1 |
| 19.1 | | AGE HARNESS & END CONNECTOR ASSY | 0102614 | | 1015056-021 | 8102628 | 1015056-031 | | | Y | Y | REVISED PER TDRR 28757 | 66 | 8/1/51 | 1/1 | Y | Y | REVISED PER TDRR 28757 | 66 | 8/1/51 | 1/1 |
| 19.2 | | COUPLING DISPLAY ASSY | 0102619 | | 1016902-021 | 8102636 | 101304-021 | | | Z | Z | REVISED PER TDRR 28808 | 66 | 8/1/51 | 1/1 | Z | Z | REVISED PER TDRR 28808 | 66 | 8/1/51 | 1/1 |
| 19.3 | | POWER & SERVO ASSY | 0102617 | | 1007257-041 | 8102634 | 1007257-061 | | | AA | AA | REVISED PER TDRR 29138 | 66 | 8/1/51 | 1/1 | AA | AA | REVISED PER TDRR 29138 | 66 | 8/1/51 | 1/1 |
| 19.4 | | IMU | 0102617 | | 1001500-041 | 8102634 | 1001500-071 | | | AB | AB | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AB | AB | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 20.0 | MOISTURE SEAL & STRUCTURAL STRENGTH | AGE HARNESS & END CONNECTOR ASSY | 0102626 | ECP 225 & 270 | 1015086-000 | 8102646 | 1015086-011 | G&N 109, 110, 121, 122, 123, 124 SERIES 100 SPARES | | AC | AC | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AC | AC | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 21.0 | NEW G&N FILTER MODULE, ELIMINATE CORROSION MOISTUREPROOF CONNECTOR WIRING A, TRAY 7 | | 0102618 | ECP 266, 268, & 269 | | 8102655 | | | | AD | AD | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AD | AD | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 21.1 | | PSA | | | 1007570-011 | | 1007570-021 | 100 SERIES | | AE | AE | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AE | AE | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 21.2 | | IMU | | | 1001500-051 | | 1001500-081 | G&N 109, 110, 111 | | AF | AF | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AF | AF | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 22.0 | MODIFY THE OPTICS UNIT FOR PROPER MATING OF CONNECTORS USED IN THE THERMAL-VACUUM TESTING PROGRAM. | OPTICAL UNIT | 0102635 | ECP 328 | 1011000-006 | 8102657 | 1011000-006 | G&N 20 | | AG | AG | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AG | AG | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 23.0 | DISAB "6" TRACK AND "TRACKER POWER" SWITCHES | G&N INDICATOR CONTROL PANEL ASSY | 0102632 | ECP 209 | 1014664-021 | 8102654 | 1014664-031 | 110, 111, 121, 122, 123, 124 AND SPARES | | AH | AH | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AH | AH | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 24.0 | MOISTURE SEALING | CDU ASSEMBLY | 0102620 | ECP 267 | 1015500-021 | 8102652 | 1015500-041 | SPARES FOR G&N 12 AND SERIES 100 | | AI | AI | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AI | AI | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 25.0 | MOISTURE SEALING | CDU ASSEMBLY | 0102620 | ECP 267 | 1015500-031 | 8102653 | 1015500-051 | SPARES FOR SERIES 100 OPTICS CDU | | AJ | AJ | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AJ | AJ | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 26.0 | MOISTURE PROOFING | PSA | 0102628 | ECP 206 | | 8102650 | | | | AK | AK | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AK | AK | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 26.1 | | | | | 1007257-031 | | NO CHANGE | G&N 20 | | AL | AL | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AL | AL | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 26.2 | | | | | 1007257-051 | | | G&N 17 | | AM | AM | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AM | AM | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 26.3 | | | | | 1007257-061 | | | G&N 12 | | AN | AN | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AN | AN | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 26.4 | | | | | 1007570-021 | | | G&N 110 THRU 124 | | AO | AO | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AO | AO | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 27.0 | MOISTURE PROOFING | | 0102628 | ECP 206 | | 8102651 | | | | AP | AP | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AP | AP | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 27.1 | | | | | 1007257-031 | | NO CHANGE | G&N 20 | | AR | AR | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AR | AR | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 27.2 | | | | | 1007257-051 | | | G&N 17 | | AS | AS | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AS | AS | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 27.3 | | | | | 1007257-061 | | | G&N 12 | | AT | AT | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AT | AT | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 27.4 | | | | | 1007570-021 | | | G&N 110 THRU 124 | | AU | AU | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AU | AU | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 27.5 | MOISTURE PROOFING | TRACKER X & Y | 0102628 | ECP 206 | 1007585-011 | 8102651 | NO CHANGE | G&N 110 THRU 124 | | AV | AV | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AV | AV | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 28.0 | 1. GROUNDING OF GROUP SHIELDS 2. MOISTURE SEAL | AGE HARNESS AND PSA END CONNECTOR ASSY | 0102633 | ECP 225 & 270 | 1015086-000 | 8102655 | 1015086-021 | G&N 110 | | AW | AW | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AW | AW | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |
| 29.0 | GROUNDING OF GROUP SHIELDS | AGE HARNESS AND PSA END CONNECTOR ASSY | 0102634 | ECP 225 | 1015086-000 | 8102656 | 1015086-031 | G&N 109 | | AX | AX | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 | AX | AX | REVISION STATUS CHANGED | 66 | 8/1/51 | 1/1 |

| | | | | | |
|---|----------|--|--|---|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON | | AC ELECTRONICS COMPANY DIVISION GENERAL MOTORS CORP. WARREN, MI 48090 | | MANNED SPACECRAFT CENTER HOUSTON TEXAS | |
| 2 PLACE | 3 PLACE | DATE <u>2-2-66</u> | | MASTER RETROFIT KIT LIST APOLD 68N (AC ELECTRONICS) | |
| DECIMALS | DECIMALS | DRAWN BY <u>2-10-66</u> | | | |
| ANGLES | ANGLES | CHECKED <u>2-10-66</u> | | | |
| + | + | APPROVED <u>2-10-66</u> | | | |
| DO NOT SCALE T.Y.S. DRAWING | | CONTRACT WAS 9-407 | | SIZE CODE IDENT NO | |
| MATERIAL | | NASA APPROVAL | | D 99974 | |
| APPROVAL | | MIT APPROVAL <u>2-10-66</u> | | 1021200 | |
| | | SCALE | | SHEET 2 OF 3 | |

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B. NO. (REF) | AUTHORIZATION ECP. NO. OR S.O.W. | P/N MOD. (REF) | R/K NO. | NEW P/N (REF) | S/N |
|----------|--|---|------------------|----------------------------------|----------------|---------|---------------|-------------------------|
| 30.0 | COATING OF EXPOSED BERYLLIUM PARTS | NAVIGATION BASE ASSY | 0102611 | ECP 219 | 1899982-000 | 8102625 | NO CHANGE | G&N 12, 23, 121, 122 |
| 30.1 | | OPTICAL UNIT ASSY | | | 1011000-001 | | | |
| 30.2 | | PSA, TOE CAP | | | 1008535-001 | | | |
| 31.0 | COATING OF EXPOSED BERYLLIUM PARTS | NAVIGATION BASE AND OPTICAL UNIT ASSY | 0102611 | ECP 219 | 1899982-000 | 8102625 | NO CHANGE | BLK 1 (50 & 100) SPARES |
| 32.0 | ADDITION OF LEM B HARNESS BRACKET TO IMU | | | | 6007001-011 | 8102658 | 6007001-031 | G&N 601, 602 |
| 32.1 | | INERTIAL MEASUREMENT UNIT AND PULSE TORQUE ASSY | 0102636 | ECP 306 | 2018601-011 | | 2018601-031 | G&N 601, 602 |
| 32.2 | | INERTIAL MEASURING UNIT ASSY | | | 6007001-021 | | 6007001-041 | G&N 603, 604 & SPARE |
| 32.3 | | INERTIAL MEASUREMENT UNIT & PULSE TORQUE ASSY | | | 2018601-041 | | 2018601-051 | G&N 603, 604 & SPARE |
| 32.4 | | INERTIAL MEASURING UNIT ASSY | | | | | | |
| 33.0 | PAINTING OF GIN BERYLLIUM SURFACES | | 0102611 | ECP 219 | 1899982-000 | 8102625 | | G&N 12 |
| 33.1 | | FRAME ASSY NAV BASE | | | | | | 50 SERIES SPARE |
| 33.2 | | | | | | | | 100 SERIES SPARE |
| 33.3 | | | | | | | | G&N 121 |
| 33.4 | | | | | | | | G&N 122 |
| 33.5 | | | | | | | | G&N 12 |
| 33.6 | | OPTICAL UNIT ASSY | | | 1011000-005 | | 1011000-005 | 50 SERIES SPARE |
| 33.7 | | | | | 1011000-007 | | 1011000-007 | G&N 121 |
| 33.8 | | | | | 2011000-001 | | 2011000-001 | G&N 122 |
| 33.9 | | | | | 2011000-021 | | 2011000-022 | 100 SERIES SPARE |
| 33.10 | | | | | 2011000-021 | | 2011000-022 | G&N 12 |
| 33.11 | | PSA TOE CAP | | | 1008535-001 | | 1008535-001 | G&N 121 |
| 33.12 | | | | | 1008535-001 | | 1008535-001 | G&N 122, 123, 124 |
| 33.13 | | | | | 1008535-001 | | 1008535-001 | G&N 12 |
| 33.14 | | NAV BASE & OPTICAL UNIT ASSY | | | 1899950-091 | | 1899950-091 | 50 SERIES SPARE |
| 33.15 | | | | | -141 | | -141 | 100 SERIES SPARE |
| 33.16 | | | | | -141 | | -141 | G&N 121 |
| 33.17 | | | | | -141 | | -141 | G&N 122 |
| 33.18 | | | | | -141 | | -141 | SPARES |
| 34.0 | MOISTURE PROOFING | PSA, FRAMES #1-4 | 0102637 | ECP 269 | 1007531-011 | 8102659 | 1007531-031 | |
| | | | | | 1007532-011 | | 1007532-031 | |
| | | | | | 1007533-011 | | 1007533-031 | |
| | | | | | 1007534-011 | | 1007534-031 | |
| 34.1 | MOISTURE PROOFING | PSA, FRAMES #5-10 | 0102637 | ECP 269 | 1007535-011 | 8102660 | 1007535-031 | SPARES |
| | | | | | 1007536-011 | | 1007536-031 | |
| | | | | | 1007537-011 | | 1007537-031 | |
| | | | | | 1007538-011 | | 1007538-031 | |
| | | | | | 1007539-011 | | 1007539-031 | |
| | | | | | 1007530-011 | | 1007530-031 | |
| 34.2 | MOISTURE PROOFING | IMU | 0102638 | ECP 269 | 1001500-041 | 8102661 | 1001500-091 | SPARES |
| 34.3 | MOISTURE PROOFING | PSA MODULES | 0102638 | ECP 269 | 1007507-011 | 8102662 | 1007507-041 | SPARES |
| | | | | | 1007218-011 | | 1007218-021 | |
| | | | | | 1007401-011 | | 1007401-021 | |
| | | | | | 1007402-011 | | 1007402-021 | |
| | | | | | 1007412-011 | | 1007412-021 | |
| | | | | | 1007426-011 | | 1007426-021 | |
| | | | | | 1007427-011 | | 1007427-021 | |
| | | | | | 1007437-011 | | 1007437-021 | |
| | | | | | 1007462-011 | | 1007462-021 | |
| | | | | | 1007480-011 | | 1007480-021 | |
| | | | | | 1007481-011 | | 1007481-021 | |
| | | | | | 1007482-011 | | 1007482-021 | |
| | | | | | 1007483-011 | | 1007483-021 | |
| | | | | | 1007484-011 | | 1007484-021 | |
| | | | | | 1007485-011 | | 1007485-021 | |
| | | | | | 1007486-011 | | 1007486-021 | |
| | | | | | 1007487-011 | | 1007487-021 | |
| | | | | | 1007488-011 | | 1007488-021 | |
| | | | | | 1007507-021 | | 1007507-031 | |
| | | | | | 1007510-011 | | 1007510-021 | |
| | | | | | 1007516-011 | | 1007516-021 | |
| | | | | | 1007517-011 | | 1007517-021 | |

| ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED |
|------|-----|---------------------------------|----------|-----------|----------|
| Z | | THIS SHEET ADDED PER TDRR 28808 | | 19 MAY 66 | J J J |
| AA | | REVISION STATUS CHANGED | | 10 JUN 66 | M P J |
| AB | | REVISED PER TDRR 29363 | | 10 JUN 66 | M P J |
| AC | | REVISED PER TDRR 29507 | | 5 JUL 66 | L K |
| AD | | REVISED PER TDRR 29828 | | 8 JUL 66 | J |
| AE | | REVISION STATUS CHANGED | | 2 JULY 66 | J E |
| AF | | REVISION STATUS CHANGED | | 14 AUG 66 | C L |
| AG | | REVISION STATUS CHANGED | | 27 SEP 66 | J J R |
| AH | | REVISION STATUS CHANGED | | 30 SEP 66 | J J R |
| AI | | REVISED PER TDRR 31245 | | 10 OCT 66 | J J R |
| AK | | REVISION STATUS CHANGED | | 20 OCT 66 | J J R |
| AL | | REVISION STATUS CHANGED | | 24 OCT 66 | J J R |
| AM | | REVISION STATUS CHANGED | | 24 OCT 66 | J J R |
| AN | | REVISION STATUS CHANGED | | 1 NOV 66 | J J R |
| AO | | REVISION STATUS CHANGED | | 9 NOV 66 | J J R |
| AP | | REVISION STATUS CHANGED | | 10 NOV 66 | J J R |
| AS | | REVISION STATUS CHANGED | | 23 NOV 66 | J J R |
| AT | | REVISION STATUS CHANGED | | 23 NOV 66 | J J R |
| AU | | REVISED PER TDRR 32030 | | 23 NOV 66 | J J R |
| AV | | REVISION STATUS CHANGED | | 14 DEC 66 | J J R |
| AW | | REVISION STATUS CHANGED | | 14 DEC 66 | J J R |
| AX | | REVISION STATUS CHANGED | | 14 DEC 66 | J J R |
| AZ | | REVISION STATUS CHANGED | | 14 DEC 66 | J J R |
| BA | | REVISION STATUS CHANGED | | 14 JAN 67 | J J R |
| BB | | REVISION STATUS CHANGED | | 14 JAN 67 | J J R |
| BC | | REVISION STATUS CHANGED | | 14 JAN 67 | J J R |
| BD | | REVISION STATUS CHANGED | | 27 JAN 67 | J J R |
| BE | | REVISION STATUS CHANGED | | 27 JAN 67 | J J R |
| BF | | REVISION STATUS CHANGED | | 27 JAN 67 | J J R |
| BG | | REVISION STATUS CHANGED | | 4 APR 67 | J J R |
| BH | | REVISION STATUS CHANGED | | 12 APR 67 | J J R |
| BI | | REVISION STATUS CHANGED | | 12 APR 67 | J J R |
| BJ | | REVISION STATUS CHANGED | | 12 APR 67 | J J R |
| BK | | REVISION STATUS CHANGED | | 12 APR 67 | J J R |
| BL | | REVISION STATUS CHANGED | | 12 APR 67 | J J R |
| BM | | REVISION STATUS CHANGED | | 2 AUG 67 | J J R |
| BN | | REVISION STATUS CHANGED | | 2 AUG 67 | J J R |
| BP | | REVISION STATUS CHANGED | | 9 AUG 67 | J J R |
| BR | | REVISION STATUS CHANGED | | 9 AUG 67 | J J R |
| BS | | REVISION STATUS CHANGED | | 9 AUG 67 | J J R |
| BT | | REVISION STATUS CHANGED | | 9 AUG 67 | J J R |
| BU | | REVISION STATUS CHANGED | | 9 AUG 67 | J J R |
| BV | | REVISION STATUS CHANGED | | 9 AUG 67 | J J R |
| BW | | REVISION STATUS CHANGED | | 1 SEP 67 | J J R |
| BY | | REVISION STATUS CHANGED | | 1 SEP 67 | J J R |
| BZ | | REVISION STATUS CHANGED | | 20 SEP 67 | J J R |

| | | | | | |
|---|--|---|--|---|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PLACE 3 PLACE DECIMALS DECIMALS ANGLES + + + + + - - - - - | | AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS DRAWN BY: J. J. J. DATE: 19 MAY 66 CHECKED BY: J. J. J. APPROVAL: J. J. J. CONTRACT NAS 9-497 | | MANAGER SPACECRAFT CENTER HOUSTON, TEXAS MASTER REFIT KIT LIST APOLLO 8 & N (AC ELECTRONICS) | |
| DO NOT SCALE THIS DRAWING | | NASA APPROVAL: J. J. J. | | SIZE: CODE IDENT NO: D 99974 | |
| MATERIAL: | | MIT APPROVAL: J. J. J. | | SCALE: 1" = 1" | |
| APPROVAL: J. J. J. | | MIT APPROVAL: J. J. J. | | SHEET 3 OF 6 | |

1021200

| ITEM NO. | DESCRIPTION | END ITEM | R. I. B. NO. (REF.) | AUTHORIZATION ECP. NO. OR S.O.W. | P/N MOD. (REF.) | RFK NO. | NEW P/N (REF.) | S/N |
|----------|---|------------------------------------|---------------------|----------------------------------|-----------------|---------|----------------|------------------------------------|
| | | | | | 1007511-011 | | 1007511-021 | |
| | | | | | 1007514-011 | | 1007514-021 | |
| | | | | | 1007549-011 | | 1007549-041 | |
| | | | | | 1007518-011 | | 1007518-041 | |
| | | | | | 1007518-021 | | 1007518-031 | |
| | | | | | 1007519-011 | | 1007519-021 | |
| | | | | | 1007522-011 | | 1007522-021 | |
| | | | | | 1007523-011 | | 1007523-021 | |
| | | | | | 1007524-011 | | 1007524-021 | |
| | | | | | 1007525-011 | | 1007525-021 | |
| | | | | | 1007526-011 | | 1007526-021 | |
| | | | | | 1007527-011 | | 1007527-021 | |
| | | | | | 1007528-011 | | 1007528-021 | |
| | | | | | 1007540-011 | | 1007540-041 | |
| | | | | | 1007540-021 | | 1007540-031 | |
| | | | | | 1007541-011 | | 1007541-041 | |
| | | | | | 1007541-021 | | 1007541-031 | |
| | | | | | 1007542-011 | | 1007542-021 | |
| | | | | | 1007543-011 | | 1007543-041 | |
| | | | | | 1007543-021 | | 1007543-031 | |
| | | | | | 1007544-011 | | 1007544-021 | |
| | | | | | 1007545-011 | | 1007545-041 | |
| | | | | | 1007545-021 | | 1007545-031 | |
| | | | | | 1007546-011 | | 1007546-021 | |
| | | | | | 1007547-011 | | 1007547-021 | |
| | | | | | 1007549-021 | | 1007549-031 | |
| | | | | | 1007551-011 | | 1007551-021 | |
| | | | | | 1007552-011 | | 1007552-021 | |
| | | | | | 1007554-011 | | 1007554-021 | |
| | | | | | 1007555-011 | | 1007555-021 | |
| | | | | | 1007556-011 | | 1007556-021 | |
| | | | | | 1007557-011 | | 1007557-021 | |
| | | | | | 1007558-011 | | 1007558-021 | |
| | | | | | 1007561-011 | | 1007561-021 | |
| | | | | | 1007563-011 | | 1007563-021 | |
| | | | | | 1007564-011 | | 1007564-021 | |
| | | | | | 1007567-011 | | 1007567-021 | |
| | | | | | 1007581-011 | | 1007581-021 | |
| | | | | | 1007590-021 | | 1007590-031 | |
| | | | | | 1007591-011 | | 1007591-021 | |
| | | | | | 1007651-011 | | 1007651-021 | |
| | | | | | 1001598-021 | | 1001598-041 | |
| | | | | | 1007509-021 | | 1007509-031 | |
| | | | | | 1001599-011 | | 1001599-031 | |
| | | | | | 1007521-011 | | 1007521-041 | |
| | | | | | 1007550-011 | | 1007550-021 | |
| | | | | | 1007550-021 | | 1007550-061 | |
| | | | | | 1007550-031 | | 1007550-071 | |
| | | | | | 1007550-041 | | 1007550-081 | |
| 35.0 | REPLACING PULSE TORQUE POWER SUPPLY WITH IMPROVED MODULE | | | ECP 248 | | | | |
| 35.1 | | IMU ASSOCIATED ELECTRONICS TC ASSY | 0102640 | ECP 248 | 2010747-021 | 02663 | 2010747-031 | 602 |
| 35.2 | | PULSE TORQUE AND THERMOCOUPLE ASSY | 0102640 | ECP 248 | 6010656-011 | 0102663 | 6010656-021 | 602 |
| 35.3 | | IMU PULSE TORQUE ASSEMBLY | 0102640 | ECP 248 | 6010700-021 | 0102663 | 6010700-031 | 603, 604, 605, 606 AND SPARE |
| 35.4 | | PULSE TORQUE ASSEMBLY | 0102640 | ECP 248 | 6007000-051 | 0102663 | 6007000-041 | 603, 604, 605, 606 AND SPARE |
| 35.5 | | POWER, SERVO AND TC ASSY, C/M | 0102639 | ECP 248 | 2010743-011 | 0102664 | 2010743-021 | 202 |
| 35.6 | | POWER AND SERVO ASSEMBLY, C/M | 0102639 | ECP 248 | 2007200-011 | 0102664 | 2007200-051 | 203, 204, AND SPARE |
| | ADDITION OF SILICONE RUBBER STRIPS TO THE EYEPIECE STOWAGE UNIT | | | ECP 407 | | | | |
| | | STOWAGE UNIT EYEPIECE | | | 1021255-011 | 0102672 | 1021255-031 | G & N 12, 20 |
| | | STOWAGE UNIT EYEPIECE | | | 1021255-021 | 0102673 | 1021255-041 | G & N 110, 121, 122, 123, 124, 111 |
| | | CASE - EYEPIECE STOWAGE | | | 1021314-008 | 0102679 | 1021314-011 | SPARE |

| REVISIONS | | | | DATE | | APPROVED | |
|-----------|-----|--------------------------------|---------|-----------|--|----------|--|
| ZONE | LYN | DESCRIPTION | CHG NO. | | | | |
| | AD | THIS SHEET ADDED PER TDR 29823 | | 8 JUL 68 | | | |
| | AE | REVISED PER TDR 29822 | | 20 JUL 68 | | | |
| | AF | REVISED PER TDR 30542 | | 24 AUG 68 | | | |
| | AG | REVISION STATUS CHANGED | | 24 SEP 68 | | | |
| | AH | REVISION STATUS CHANGED | | 30 SEP 68 | | | |
| | AJ | REVISION STATUS CHANGED | | 30 SEP 68 | | | |
| | AK | REVISION STATUS CHANGED | | 11 OCT 68 | | | |
| | AL | REVISION STATUS CHANGED | | 20 OCT 68 | | | |
| | AM | REVISION STATUS CHANGED | | 24 OCT 68 | | | |
| | AN | REVISION STATUS CHANGED | | 7 NOV 68 | | | |
| | AP | REVISION STATUS CHANGED | | 9 NOV 68 | | | |
| | AR | REVISION STATUS CHANGED | | 10 NOV 68 | | | |
| | AS | REVISION STATUS CHANGED | | 24 NOV 68 | | | |
| | AT | REVISION STATUS CHANGED | | 24 NOV 68 | | | |
| | AU | REVISED PER TDR 32030 | | 24 NOV 68 | | | |
| | AV | REVISION STATUS CHANGED | | 10 DEC 68 | | | |
| | AW | REVISION STATUS CHANGED | | 14 DEC 68 | | | |
| | AX | REVISION STATUS CHANGED | | 14 DEC 68 | | | |
| | AY | REVISION STATUS CHANGED | | 14 DEC 68 | | | |
| | AZ | REVISION STATUS CHANGED | | 14 DEC 68 | | | |
| | BA | REVISION STATUS CHANGED | | 12 JAN 69 | | | |
| | BB | REVISION STATUS CHANGED | | 12 JAN 69 | | | |
| | BC | REVISION STATUS CHANGED | | 13 JAN 69 | | | |
| | BD | REVISION STATUS CHANGED | | 22 FEB 69 | | | |
| | BE | REVISION STATUS CHANGED | | 24 FEB 69 | | | |
| | BF | REVISION STATUS CHANGED | | 24 FEB 69 | | | |
| | BG | REVISION STATUS CHANGED | | 4 APR 69 | | | |
| | BH | REVISION STATUS CHANGED | | 12 APR 69 | | | |
| | BI | REVISION STATUS CHANGED | | 12 APR 69 | | | |
| | BK | REVISION STATUS CHANGED | | 3 APR 69 | | | |
| | BL | REVISION STATUS CHANGED | | 12 APR 69 | | | |
| | BM | REVISION STATUS CHANGED | | 2 APR 69 | | | |
| | BN | REVISION STATUS CHANGED | | 9 JUL 69 | | | |
| | BP | REVISION STATUS CHANGED | | 9 JUL 69 | | | |
| | BR | REVISION STATUS CHANGED | | 21 AUG 69 | | | |
| | BS | REVISION STATUS CHANGED | | 1 AUG 69 | | | |
| | BT | REVISION STATUS CHANGED | | 28 JUL 69 | | | |
| | BU | REVISION STATUS CHANGED | | 29 AUG 69 | | | |
| | BV | REVISION STATUS CHANGED | | 30 AUG 69 | | | |
| | BW | REVISION STATUS CHANGED | | 1 SEP 69 | | | |
| | BY | REVISION STATUS CHANGED | | 15 SEP 69 | | | |
| | BZ | REVISION STATUS CHANGED | | 20 SEP 69 | | | |

| | | | | | |
|---|--|--|--|---|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PLACE 3 PLACE DECIMALS DECIMALS ANGLES + - - - - - - - - - - | | AC ELECTRONICS DIVISION GENERAL MOTORS CORP. WILMAHUS MS PLAZA 8 JUL 68 DATE 22 JUL 68 CHECKED 22 JUL 68 | | MANAGED SPACECRAFT CENTER HOUSTON, TEXAS | |
| DO NOT SCALE THIS DRAWING | | CONTRACT NAS 9-497 | | MASTER RETROFIT KIT LIST APOLLO GEN (AC ELECTRONICS) | |
| MATERIAL | | NASA APPROVAL | | SIZE CODE IDENT NO D 99974 | |
| APPROVAL | | MIT APPROVAL | | SCALE 1:1 | |
| | | | | SHEET 4 OF 6 | |

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B. NO.(REF) | AUTHORIZATION ECP NO. OR SOW | P/N MOD. (REF) | RFK NO. | NEW P/N (REF) | S/N |
|----------|--|---|-----------------|------------------------------|----------------|---------|---------------|----------------------------------|
| 35.7 | | POWER & SERVO ASSEMBLY C/M | 0102639 | ECP 248 | 2007200-071 | 8102664 | 2007200-091 | G&N 203, 204, AND SPARE NO.1 |
| 37.0 | ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "50") | | 0102653 | ECP 426 | | 8102682 | | |
| 1 | | NAVIGATION BASE & OPTICAL UNIT ASSEMBLY | | | 1899950-091 | | 1899950-251 | G&N 17 |
| 2 | | | | | 1899950-281 | | 1899950-261 | G&N 20 |
| 3 | | | | | 1899950-231 | 8102682 | 1899950-271 | G&N 12 |
| 38.0 | ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK I "100") | | 0102653 | ECP 426 | | 8102682 | | |
| 1 | | NAVIGATION BASE & OPTICAL UNIT ASSEMBLY | 0102654 | ECP 427 | | 8102680 | | |
| 2 | | | 0102654 | | 1899950-171 | 8102680 | 1899950-281 | G&N 111 |
| 3 | | | 0102654 | | 1899950-211 | 8102680 | 1899950-291 | G&N 121 |
| 4 | | | 0102662 | | 1899950-311 | 8102691 | 1899950-311 | G&N 123 |
| 39.0 | CORRECT IDENTIFICATION OF NAV. BASE & OPTICS ASSY | | 0102662 | ECP 427 | 1899950-211 | 8102708 | 1899950-321 | G&N 122 |
| 1 | | NAV. BASE & OPTICAL UNIT ASSY | 0102646 | ECP 290 | | 8102671 | | |
| 2 | | | | | 1899950-171 | | | G&N 109, 111 |
| 3 | | | | | 1899950-181 | | | G&N 121 |
| 4 | | | | | 1899950-191 | | | G&N 123 |
| 5 | | | | | 1899950-211 | | | G&N 122, 120 SPARE |
| 6 | | | | | 1899950-221 | | | G&N 20 |
| 7 | | | | | 1899950-231 | | | G&N 12 |
| 40.0 | ADD VELCRO STRIPS FOR STORAGE AND SPACERS TO MTG. SURFACE. | | 0102646 | ECP 290 | | 8102671 | 1899950-241 | G&N 50 SPARE |
| 41.0 | REPLACEMENT OF IMU MOUNTING BOLTS | | 0102656 | ECP 423 | 014532 | 8102683 | 1023080-011 | 12, 121, 122, 123, & 124 |
| 1 | | G&N SYSTEM | | ECP 359 | | | | |
| 2 | | NAV. BASE AND OPTICAL UNIT INST. KIT | 0102643 | ECP 359 | 2899950-011 | 8102683 | 2899950-031 | G&N 201, 202, 203, 204, 205, 206 |
| 3 | | NAV. BASE ASSEMBLY - LEM | 0102643 | ECP 359 | 2899950-031 | 8102683 | 2899950-021 | G&N 601, 602 |
| 4 | | NAV. BASE ASSEMBLY - LEM | 0102643 | ECP 359 | 2899950-031 | 8102683 | 2899950-021 | G&N 603, 604, 605, 606 |
| 42.0 | ADD METAL BELLOWS TO BLOCK II | | 0102642 | ECP 373 | | 8102667 | | |
| 1 | | NAV. BASE AND OPTICAL UNIT INST. KIT | | | 2899950-031 | 8102667 | 2899950-021 | G&N 202, 204, 205, 206 |
| 2 | | | | | *201000-035 | | *2010790-011 | |
| 3 | | | | | *201000-034 | | *2010790-021 | |
| 4 | | | | | *201000-034 | | *2010790-021 | |
| 5 | | | | | *201000-041 | | *2010790-031 | |
| 42.2 | | * THE OPTICAL UNIT 2011000 IS NOT TO BE MODIFIED BUT IS BEING INSTALLED INTO THE OPTICAL UNIT AND BELLOWS ASSY 2010790. | | | | | | |
| 43.0 | CORROSION PROTECTION | | | ECP 388 | | | | |
| 1 | | POWER & SERVO ASSEMBLY (C/M) | 0102649 | | 2007200-031 | 8102675 | 2007200-061 | G&N 203 & SPARE NO.1 |
| 2 | | COUPLING DATA UNIT (C/M) | 0102650 | | 2007222-031 | 8102676 | 2007222-071 | G&N 203 |
| 3 | | INTERNAL MEASUREMENT UNIT & PULSE TORQUE ASSEMBLY | 0102651 | | 6007001-041 | 8102677 | 6007001-061 | G&N 603, 604 & SPARE NO.1 |
| 4 | | INERTIAL MEASUREMENT UNIT & PIPA ELECTRONICS ASSEMBLY | 0102648 | | 2007203-021 | 8102674 | 2007203-041 | G&N 203 |
| 5 | | COUPLING DATA UNIT | 0102650 | | 2007222-061 | 8102676 | 2007222-081 | G&N 603, 604 & SPARE NO.1 |
| 6 | | POWER & SERVO ASSEMBLY (LEM) | 0102652 | | 6007200-021 | 8102678 | 6007200-041 | G&N 603, 604 & SPARE NO.1 |
| 7 | | G&N INTERCONNECT HARNESS GROUP C/M BLOCK II | 0102644 | | 2014567-021 | 8102663 | 2014567-031 | G&N 202, 203 & SPARE NO.1 |
| 8 | | G&N INTERCONNECT HARNESS GROUP LEM | 0102645 | | 6014515-011 | 8102670 | 6014515-021 | G&N 603 & 604 |
| 9 | | COUPLING DATA UNIT C/M | 0102650 | ECP 388 | 2007222-051 | 8102676 | 2007222-091 | C/M SPARE NO.1 |
| 10 | | POWER, SERVO & TC ASSEMBLY (C/M) | 0102649 | ECP 388 & 529 | 2010743-021 | 8102675 | 2010743-041 | G&N 202 |
| 11 | | COUPLING DATA TC UNIT (C/M) | 0102653 | ECP 388 | 2010744-011 | 8102676 | 2010744-031 | G&N 202 |
| 12 | | IMU AND ASSOCIATED ELECTRONICS TC ASSY | 0102648 | ECP 388 | 2010747-011 | 8102674 | 2010747-041 | G&N 202 |
| 44.0 | REPLACEMENT OF COVER SPRING IN THE EBU | | | ECP 456 | | | | |
| 1 | | G&N SYSTEM | | | | | | |
| 2 | | STOWAGE UNIT EYEPIECE | 0102653 | ECP 456 | 1021255-031 | 8102693 | 1021255-051 | G&N 12 |
| 3 | | STOWAGE UNIT EYEPIECE | 0102653 | ECP 456 | 1021255-041 | 8102693 | 1021255-061 | G&N 121, 111, 124 |
| 4 | | CASE EYEPIECE STOWAGE | 0102653 | ECP 456 | 1021314-011 | 8102693 | 1021314-021 | SPARE |
| 5 | | SIG. COND ASSY | 0102659 | ECP 438 | 1007700-021 | 8102687 | 1007700-041 | G&N 12 |
| 6 | | SIG. COND ASSY | 0102659 | ECP 438 | 1007700-031 | 8102687 | 1007700-051 | G&N 121, 122, 123 |
| 7 | | FRAME ASSY | 0102659 | ECP 438 | 1007670-021 | 8102687 | 1007670-041 | G&N 12, 25, SPARE |
| 8 | | FRAME ASSY | 0102659 | ECP 438 | 1007670-031 | 8102687 | 1007670-051 | G&N 121, 122, 123, SPARE |
| 9 | | NAVIGATION BASE ASSY LEM | 0102668 | ECP 462 | 6899950-011 | 8102701 | 6899950-031 | G&N 601 AND 602 |
| 10 | | NAVIGATION BASE ASSY LEM | 0102668 | ECP 462 | 6899950-011 | 8102701 | 6899950-031 | G&N 603 THRU 605 |

| REV. NO. | DESCRIPTION | CHG NO. | DATE | APPROVED |
|----------|-------------------------|---------|-----------|----------|
| AG | REVISED PER TDRR 32862 | | 24 SEP 66 | JTB |
| AH | REVISED PER TDRR 31216 | | 30 SEP 66 | JTB |
| AJ | REVISION STATUS CHANGED | | 10 SEP 66 | JTB |
| AK | REVISED PER TDRR 31359 | | 11 OCT 66 | JTB |
| AL | REVISED PER TDRR 31550 | | 20 OCT 66 | JTB |
| AM | REVISED PER TDRR 31556 | | 20 OCT 66 | JTB |
| AN | REVISED PER TDRR 31706 | | 7 NOV 66 | JTB |
| AP | REVISED PER TDRR 31793 | | 9 NOV 66 | JTB |
| AR | REVISED PER TDRR 31797 | | 10 NOV 66 | JTB |
| AS | REVISED PER TDRR 32009 | | 10 NOV 66 | JTB |
| AT | REVISED PER TDRR 32022 | | 10 NOV 66 | JTB |
| AU | REVISED PER TDRR 32030 | | 10 NOV 66 | JTB |
| AV | REVISION STATUS CHANGED | | 10 NOV 66 | JTB |
| AW | REVISED PER TDRR 32203 | | 10 DEC 66 | JTB |
| AY | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| AZ | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BA | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BB | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BC | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BD | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BE | REVISED PER TDRR 33008 | | 10 DEC 66 | JTB |
| BG | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BH | REVISED PER TDRR 33279 | | 10 DEC 66 | JTB |
| BI | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BJ | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BK | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BL | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BM | REVISED PER TDRR 33655 | | 10 DEC 66 | JTB |
| BN | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BO | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BP | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BQ | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BR | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BS | REVISED PER TDRR 33987 | | 10 DEC 66 | JTB |
| BT | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BU | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BV | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BW | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BY | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |
| BZ | REVISION STATUS CHANGED | | 10 DEC 66 | JTB |

| | | | | | |
|--|--|--------------------------------------|--|--------------------------|--|
| UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ON: | | AC ELECTRONICS DIVISION | | MANNED SPACECRAFT CENTER | |
| 3 PLACE DECIMALS DECIMALS ANGLES | | GENERAL MOTORS CORP. - NEWVILLE, PA. | | HOUSTON, TEXAS | |
| 2 PLACE DECIMALS DECIMALS ANGLES | | DATE: 10/21/66 | | MASTER REPROFIT KIT LIST | |
| 1 PLACE DECIMALS DECIMALS ANGLES | | DRAWN BY: J. WILSON | | APPROVED BY: J. WILSON | |
| DO NOT SCALE THIS DRAWING | | CONTRACT: NAS 9-497 | | SIZE: 1021200 | |
| MATERIAL: | | NASA APPROVAL: J. C. METZGER | | SCALE: 1/8" = 1" | |
| APPROVAL: | | MET APPROVAL: W. KUPFER | | SHEET 50F 5 | |

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B. NO. (REF) | AUTHORIZATION ECP NO. OR S.O.W. ECF 461 | P/N MOD. (REF) | RFK NO | NEW P/N (REF) | S/N |
|----------|--|---|------------------|---|----------------|---------|---------------|---|
| 47.0 | REPLACING GIMBAL SERVO AMPLIFIER WITH IMPROVED MODULE | | | | | | | |
| 47.1 | | GIMBAL SERVO AMPLIFIER ASSEMBLY | 0102665 | ECP 461 | 2007114-011 | 8102699 | 2007114-021 | MODULE SPARES, G&N 203, 204, 603, 604, 605 AND SPARE NO.1 |
| 47.2 | | POWER AND SERVO ASSEMBLY, C/M | 0102666 | ECP 461 | 2007700-051 | 8102696 | 2007200-031 | G&N 203, 204 AND SPARE NO.1 |
| 47.3 | | POWER AND SERVO ASSEMBLY, LEM | 0102666 | ECP 461 | 2007200-081 | 8102696 | 2007200-071 | G&N 603, 604, 605, SPARE NO.1, SPARE NO.2 |
| 47.4 | | POWER, SERVO & THERMOCOUPLE ASSEMBLY, C/M | 0102666 | ECP 461 | 2010743-021 | 8102707 | 2010743-031 | G&N 202 |
| 47.5 | | POWER, SERVO & THERMOCOUPLE ASSEMBLY, LEM | 0102666 | ECP 461 | 6010655-011 | 8102707 | 6010655-021 | G&N 602 |
| 48.0 | IMPROVMENT FOR CDU CONNECTOR MATING | COUPLING DISPLAY UNIT | 0102658 | ECP 429 | 1015500-041 | 8102688 | 1015500-071 | G&N 121, 122, 123 |
| 49.0 | ADDITION OF EJECTABLE DUST COVERS | | 0102670 | | | 8102692 | | |
| 49.1 | | APTPS | 0102670 | 426 | - | 8102692 | 1021373-021 | 12 |
| 49.2 | | APTPS | 0102670 | 427 | - | 8102692 | 1021373-031 | 121 |
| 50.0 | RELAY REPLACEMENT | CDU RESOLVER LOADS ASSY | 0102661 | ECP 446 | 1007510-021 | 8102689 | 1007510-031 | |
| 50.1 | TRAY & MODULE REPLACEMENT | CDU AND POWER SUPPLY ELECT. ASSY | 0102661 | ECP 446 | 1007576-021 | 8102688 | 1007576-031 | |
| 50.2 | TRAY & REPLACEMENT | PSA | 0102661 | ECP 446 | 1007570-021 | 8102688 | 1007570-031 | |
| 50.3 | REPLACE RELAY AND DIODE MODULE | CONTROL ELEC ASSY | 0102660 | ECP 446 | 1015064-021 | 8102690 | 1015064-031 | |
| 51.0 | ADDITION OF PROTECTIVE COVERS FOR BLOCK 2 SWITCH MECHANISMS | G&N INDICATOR CONTROL PANEL ASSY | 0102664 | ECP 457 | 2014578-011 | 8102694 | 2014578-021 | 203 THRU 207 SPARES |
| 52.0 | ADDITION OF VIBRATION DAMPER PLATE AND PREVENTION OF READ LOOP OSCILLATION | RETICLE BRIGHTNESS CONTROL ASSY | 0102664 | ECP 457 | 2014656-011 | 8102695 | 2014656-021 | SPARES |
| 52.1 | | COUPLING DATA UNIT ASSEMBLY C/M & LEM | N/A | ECP 499 AND ECP 515 | 2010744-031 | 8102721 | 2010744-051 | G&N 202 |
| | | | | ECP 499 | 2007222-071 | 8102712 | 2007222-101 | G&N 203 & 204 |
| | | | | ECP 515 | 8102718 | | | G&N 205 & 2 SPARES |
| | | | | ECP 499 | 2007222-071 | 8102718 | 2007222-161 | G&N 206 |
| | | | | ECP 515 | 2007222-111 | 8102723 | 2007222-161 | G&N 604 |
| | | | | ECP 499 | 2007222-081 | 8102712 | 2007222-121 | G&N 603, 605, 606 & 2 SPARES |
| | | | | ECP 499 | 2007222-081 | 8102712 | 2007222-131 | G&N 602 |
| | | | | ECP 515 | 2010744-021 | 8102722 | 2010744-041 | |
| | | | | ECP 515 | 2007236-011 | 8102720 | 2007236-031 | |
| 52.2 | | COARSE SYSTEM ASSEMBLY | N/A | ECP 515 | | | | |
| 53.0 | ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II) | OPTICAL UNIT AND BELLOW ASSEMBLY | 0102673 | ECP 0428 | 2010790-021 | 8102704 | 2010790-061 | G&N 204 & 205 |
| | | | | ECP 0428 | 2010790-031 | 8102704 | 2010790-071 | G&N 206 |
| 53.1 | ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II) | ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM ASSEMBLY | 0102673 | ECP 0428 | 2010790-091 | 8102704 | 2010790-111 | G&N 207, 208 & 209 |
| 53.2 | ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II) | G&N SPACECRAFT EQUIPMENT COMMAND MODULE BLK II | 0102674 | ECP 0428 | - | 8102705 | - | G&N 204 THRU 209 |
| 53.3 | ADDITION OF ASTROSEXTANT PASSIVE THERMAL PROTECTION SYSTEM (BLOCK II) | OPTICAL UNIT AND BELLOW ASSEMBLY | 0102674 | ECP 0428 | 2015000-0 | 8102706 | 2015000 | G&N 202 |

| ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPROVED |
|------|-----|-------------------------|----------|-----------|----------|
| AU | | REVISED PER TDRR 32030 | | 29 NOV 65 | W.A. RUM |
| AV | | REVISED PER TDRR 32086 | | 14 DEC 65 | W.A. RUM |
| AW | | REVISION STATUS CHANGED | | 14 DEC 65 | W.A. RUM |
| AY | | REVISED PER TDRR 32203 | | 14 DEC 65 | W.A. RUM |
| AZ | | REVISED PER TDRR 32241 | | 14 DEC 65 | W.A. RUM |
| BA | | REVISED PER TDRR 32393 | | 12 JAN 67 | W.A. RUM |
| BB | | REVISED PER TDRR 32449 | | 15 JAN 67 | W.A. RUM |
| BC | | REVISED PER TDRR 32514 | | 15 JAN 67 | W.A. RUM |
| BD | | REVISED PER TDRR 32954 | | 28 FEB 67 | W.A. RUM |
| BE | | REVISION STATUS CHANGED | | 24 FEB 67 | W.A. RUM |
| BF | | REVISION STATUS CHANGED | | 24 FEB 67 | W.A. RUM |
| BG | | REVISION STATUS CHANGED | | 24 FEB 67 | W.A. RUM |
| BH | | REVISED PER TDRR 33334 | | 16 APR 67 | W.A. RUM |
| BI | | REVISED PER TDRR 33430 | | 16 APR 67 | W.A. RUM |
| BK | | REVISED PER TDRR 33431 | | 16 APR 67 | W.A. RUM |
| BL | | REVISED PER TDRR 33432 | | 16 APR 67 | W.A. RUM |
| BM | | REVISION STATUS CHANGED | | 26 AUG 67 | W.A. RUM |
| BU | | REVISION STATUS CHANGED | | 26 AUG 67 | W.A. RUM |
| BF | | REVISION STATUS CHANGED | | 26 AUG 67 | W.A. RUM |
| BR | | REVISED PER TDRR 33985 | | 26 AUG 67 | W.A. RUM |
| BS | | REVISED PER TDRR 33987 | | 26 AUG 67 | W.A. RUM |
| BT | | REVISION STATUS CHANGED | | 26 AUG 67 | W.A. RUM |
| BU | | REVISION STATUS CHANGED | | 26 AUG 67 | W.A. RUM |
| BV | | REVISION STATUS CHANGED | | 26 SEP 67 | W.A. RUM |
| BW | | REVISION STATUS CHANGED | | 26 SEP 67 | W.A. RUM |
| BY | | REVISION STATUS CHANGED | | 26 SEP 67 | W.A. RUM |
| BZ | | REVISION STATUS CHANGED | | 26 SEP 67 | W.A. RUM |

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
3 PLACE 3 PLACE
DECIMALS DECIMALS ANGLES
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DO NOT SCALE THIS DRAWING

AC ELECTRONICS DIVISION
GENERAL MOTORS CORP. BIRMINGHAM, ALA.
DRAWN BY: G. W. S. DATE: 26 SEP 65
CHECKED BY: C. W. S. J. DATE: 26 SEP 65
APPROVAL BY: C. W. S. J. DATE: 26 SEP 65
CONTRACT NO. 9-497

NASA APPROVAL BY: A. C. METZGER
MIT APPROVAL BY: N. K. P. F. E. R.

MANUEL
SPACECRAFT CENTER
HOUSTON, TEXAS

MASTER RETROFIT KIT LIST
APOLLO G&N
(AC ELECTRONICS)

SIZE: D CODE IDENT NO: 99974
SCALE: 1:1 SHEET 6 OF 8

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B. NO. (REF) | AUTHORIZATION ECP NO. OR S.O.W. | P/N MOD. (REF) | RFK NO. | NEW P/N (REF) | S/N |
|----------|---|---|------------------|---------------------------------|----------------|---------|---------------|---|
| 54.1 | CONFORMAL COAT WIRE TERMINALS AND | IMU AND PEAA | | ECP 500 | 2007203-041 | — | 2007203-061 | 203 |
| 54.2 | REPLACE PIP PREAMP | IMU AND PTA | | ECP 500 | 2007203-031 | — | 2007203-051 | 204 AND 205 |
| 54.3 | REPLACE PIP PREAMP | IMU | 0102680 | ECP 500 | 6007001-051 | — | 6007001-071 | 603,605, AND 606 |
| 54.4 | CONFORMAL COAT WIRE TERMINALS AND | IMU | | ECP 500 | 2018601-061 | 8102713 | 2018601-081 | 205, BLOCK II SPARE 2 |
| 54.5 | REPLACE PIP PREAMP | IMU | | ECP 500 | 2018601-021 | 8102716 | 2018601-091 | 205 |
| 54.6 | REPLACE PIP PREAMP | IMU | | ECP 500 | 2018601-061 | 8102716 | 2018601-081 | 205, 204, BLOCK II SPARE 1 |
| 54.7 | REPLACE PIP PREAMP | IMU | | ECP 500 | 2018601-031 | 8102715 | 2018601-071 | 603,605, LEM SPARE 1 |
| 54.8 | REPLACE CAPACITOR | PIF PREAMP | | ECP 500 | 2007060-011 | 8102714 | 2021269-011 | ALL MODULES S/N'S LOWER THAN 3140THRU49 |
| 54.9 | CHANGE IMU NAMEPLATE | IMU | 0102681 | ECP 500 | 2018601-051 | 8102717 | 2018601-071 | 606, LEM SPARE 2 |
| 54.10 | CONFORMAL WIRE TERMINALS AND | IMU & PTA | | ECP 500 | 6007001-051 | — | 6007001-071 | 604 |
| 54.11 | REPLACE PIP PREAMP | IMU | | ECP 500 | 2018601-051 | 8102716 | 2018601-071 | 604 |
| 54.12 | CONFORMAL COAT WIRE TERMINALS | IMU | | ECP 500 | 2018601-071 | 8102713 | 2018601-071 | 603,605,606,2 SPARES AC&K NO1221 |
| 55.0 | REPLACE UNRELIABLE CAPACITOR | IMU | 0102679 | ECP 500 | 1001500-091 | 8102709 | 1001500-111 | G&N 123 AND SPARE S/N 7,9 |
| | REPLACE UNRELIABLE CAPACITOR | PIF PREAMP | — | ECP 500 | 1008285-011 | 8102711 | 1008285-021 | |
| 56.0 | ADDITION OF SEALANT TO CONNECTOR PLATES AND SHORTENING OF HARNESS MOUNTING SCREWS | | | ECP 529 | | | | |
| 56.1 | | POWER AND SERVO ASSEMBLY C/M | 0102683 | ECP 529 | 2007200-081 | 8102725 | 2007200-111 | 203 THRU 206 AND 2 SPARES |
| 56.2 | | G&N INTERCONNECT HARNESS GROUP (C/M BLK II) | 0102682 | ECP 529 | 2014567-031 | 8102724 | 2014567-041 | 202 THRU 206 AND 2 SPARES |
| 57.0 | REROUTE UPLINK SIGNALS | G&N INTERCONNECT HARNESS GROUP (LEM) | | ECP 533 | 6014515-021 | 8102726 | 6014515-031 | LEM 607, |
| | | G&N I/C HARNESS "A" | | | 6010659 | | 6010670 | 2 SPARES S/N 10,12 |
| 58.0 | REPLACEMENT OF COOLANT HOSE WITH SHORTER HOSE ASS'Y | | 0102685 | ECP 561 | | | | |
| | | NAV. BASE AND OUA ASSY | | | 1899950-321 | 8102728 | 1899950-331 | G&N 122 |
| | | NAV. BASE AND OUA ASSY | | | 1899950-311 | | 1899950-341 | G&N 123 |
| | | COOLANT HOSE BYPASS ASSY | | | 1021407 | | 1021407-011 | SPARE |
| 59.0 | PROVIDE A RETICLE BRIGHTNESS POT WITH STRONGER SHAFT | G&N INDICATOR CONTROL PANEL ASSY | | ECP 538 | 2014578-021 | 8102729 | SEE ITEM 60 | 204 THRU 208 AND 1 SPARE |
| | | COMPUTER CONTROL & RETICLE DIMMER ASSY | | | 6014512-011 | | 6014512-031 | 603 AND 605 |
| | | COMPUTER CONTROL & RETICLE DIMMER ASSY | | | 6014512-021 | | 6014512-041 | 606 AND 607 |
| 60.0 | HUMAN FACTORS AND FUNCTIONAL SWITCH CHANGES | G AND N INDICATOR CONTROL PANEL ASSY | | ECP 569 | 2014578-011 | 8102730 | 2021290-011 | 202 |
| | | | | | 2014578-021 | 8102730 | 2021290-011 | 203 |
| | | | | | 2014578-031 | 8102730 | 2021290-011 | 204 THRU 214 AND 2 SPARES |
| 61.0 | INSTALL THERMAL SENSORS IN OUA | OPTICAL UNIT AND BELLOW'S ASSY | N/A | ECP 301 AND 519 | 2010790-111 | 8102739 | 2010790-121 | G&N 202 |
| 62.0 | CUT PINS NO.1 AND NO.9 | 2 SPEED SWITCH ASS'Y TRAY 8 | 0102684 | ECP 555 | 1007522-021 | 8102727 | 1007522-031 | G&N 122 & 123, S/N 502, 503 |
| 62.1 | REPLACE 2 SPEED ASSEMBLY WITH MODIFIED 2 SPEED SWITCH ASSEMBLY | OPTICAL ELECTRONICS ASS'Y TRAY 8 | 0102684 | ECP 555 | 1007578-021 | | 1007578-031 | G&N 122 & 123 |
| 62.2 | REPLACE 2 SPEED SWITCH ASS'Y WITH MODIFICATION | OPTICAL ELECTRONICS ASS'Y TRAY 8 | 0102684 | ECP 555 | 1007578-021 | | 1007578-031 | 502 AND 503 (SPARE TRAYS) |
| 62.3 | REPLACE WITH MODIFIED TRAY 8 ASSEMBLY | PSA | 0102684 | ECP 555 | 1007570-021 | | 1007570-041 | 501, G&N 123, 502, G&N 122 |

| REVISIONS | | | | | |
|-----------|-----|----------------------------------|----------|-----------|-------|
| ZONE | LTR | DESCRIPTION | CHG. NO. | DATE | APPD. |
| | 0A | THIS SHT ADDED PER T D R R 33655 | | 2 AUG 67 | |
| | BU | REVISED PER TORR 23725 | | 9 AUG 67 | |
| | BP | REVISED PER TORR 33861 | | 9 AUG 67 | |
| | BR | REVISED PER TORR 33985 | | 25 AUG 67 | |
| | BS | REVISION STATUS CHANGED | | 25 AUG 67 | |
| | BT | REVISED PER TORR 34100 | | 25 AUG 67 | |
| | BU | REVISED PER TORR 34101 | | 25 AUG 67 | |
| | BV | REVISED PER TORR 34374 | | 25 AUG 67 | |
| | BW | REVISED PER TORR 34419 | | 25 AUG 67 | |
| | BY | REVISION STATUS CHANGED | | 25 AUG 67 | |
| | BZ | REVISION STATUS CHANGED | | 25 AUG 67 | |

THIS SHEET ADDED

| | | | | | |
|--|--|---|--|--|--------------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PLACE 3 PLACE DECIMALS DECIMALS ANGLES + - - - - - DO NOT SCALE THIS DRAWING NATURAL APPROVAL | | AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS. DRAWN: NIKURS 2 AUG 67 CHECKED: [Signature] APPROVAL: [Signature] CONTRACT | | MANAGED SPACECRAFT CENTER HOUSTON, TEXAS MASTER RETROFIT KIT LIST APOLLO G&N (AC ELECTRONICS) | |
| HIT APPROVAL: [Signature] | | HIT APPROVAL: [Signature] | | SIZE: D CODE IDENT NO: 99974 SCALE: 1021200 | SHEET 7 OF 8 |

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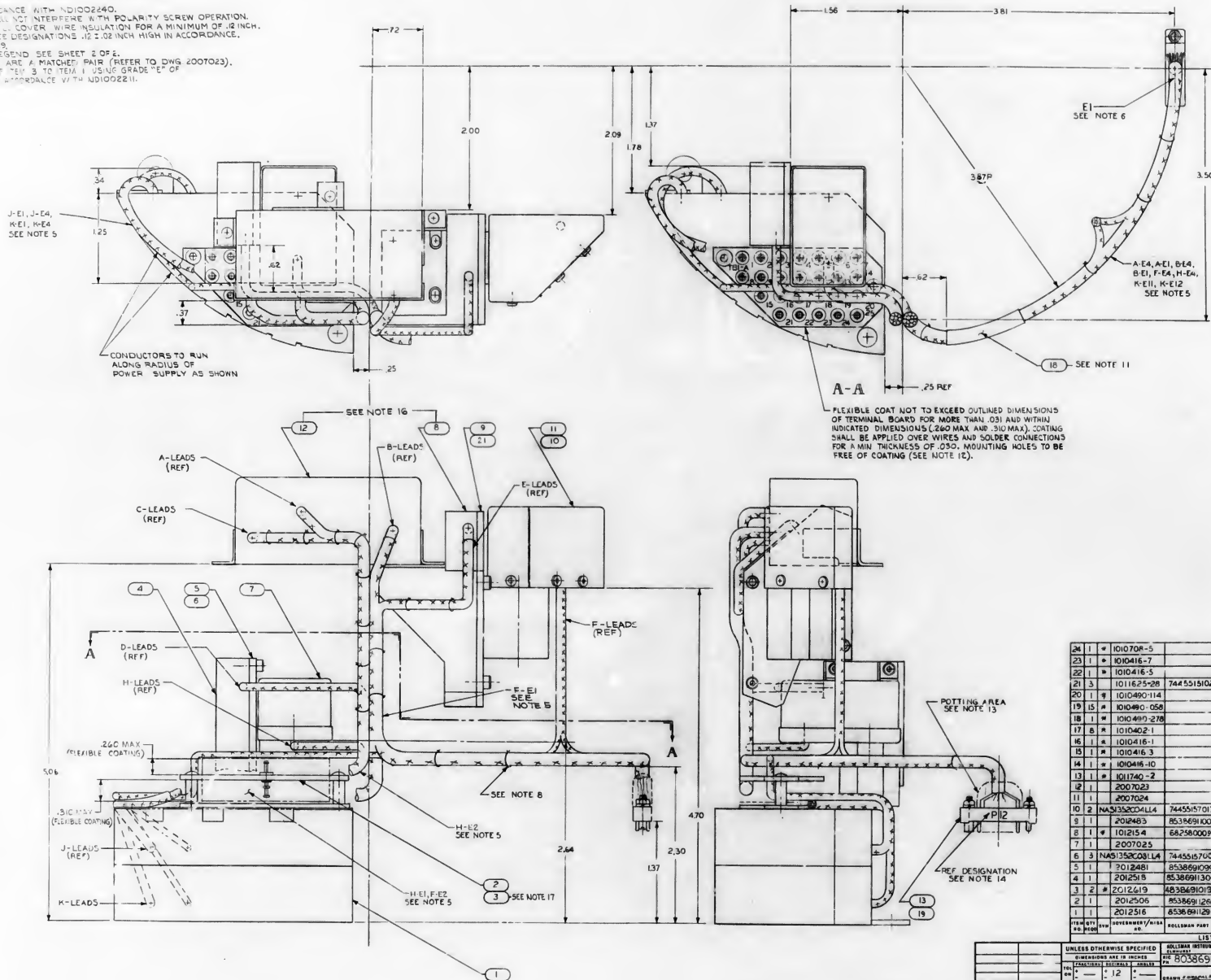
| REVISIONS | | | | | |
|-----------|-----|------------------------------|--------|-----------|------|
| ZONE | LTN | DESCRIPTION | CHG NO | DATE | APPD |
| BY | | THIS SHT ADDED PER TDR 34558 | | 10 SEP 67 | |
| BZ | | REVISED PER TDR 34558 | | 20 SEP 67 | |

| ITEM NO. | DESCRIPTION | END ITEM | R.I.B NO. (REF) | AUTHORIZATION ECP NO. OR S.O.W | P/N MOD (REF) | RFK NO | NEW F/N (REF) | S/N |
|----------|---|--|-----------------|--------------------------------|---------------|---------|---------------|---|
| 630 | MSA & Q.R. MODULE ERROR AMP; CHANGE CAPACITOR, C21 FROM 1010317-4 TO 1008900-24 | COUPLING DATA UNIT ASSY LEM | N/A | ECP 603 | | | | |
| 63.1 | | MSA & Q.R. MODULE | | | 2007238-011 | 8102741 | 2007238-031 | |
| | | | | | 2007238-021 | | 2007238-041 | |
| 63.2 | | | | ECP 603 | 2007222-131 | 8102747 | 2007222-171 | GEN 603 |
| 640 | MSA & Q.R. MODULE, ERROR AMP, CHANGE CAPACITOR C21 FROM 1010317-4 TO 1008900-24 AND TO MODIFY TRANSIENT RESPONSE TO REMOVE EFFECT ON CA MODE (DAC SATURATION) | COUPLING DATA UNIT ASSY C/M & LEM | N/A | ECP 603 & 609 | | | | |
| 64.1 | | MSA & Q.R. MODULE | | | 2007238-011 | 8102741 | 2007238-051 | SPARES & GEN MODULES |
| 64.2 | | | | | 2007238-021 | 8102748 | 2007238-061 | |
| 64.3 | | | | | 2007222-131 | 8102744 | 2007222-221 | 605, 606, 607, 608, 609 & 3 SPARES |
| 64.4 | | | | | 2007222-161 | 8102743 | 2007222-181 | 205, 206, 207, 208, 209 & 3 SPARES |
| 64.5 | | COUPLING DATA UNIT ASSY C/M & LEM | | | 2007222-101 | 8102743 | 2007222-191 | 203, 204 |
| 64.6 | | | | | 2010744-051 | 8102745 | 2010744-071 | 202 |
| | | | | ECP 603 & 609 | 2010744-041 | 8102746 | 2010744-061 | 602 |
| 65.0 | REPLACE LACING TAPE, ADD ALUM. FOIL TAPE | SIG. COND. ASS'Y C/M OPERATIONAL | N/A | ECP 623 | 2007234-011 | 8102731 | 2007234-021 | GEN 205, 206, 207, 208, 209, 210 & 210S |
| 65.1 | | HEADER ASS'Y SIG. COND. C/M OPERATIONAL | N/A | | 2007270-011 | | 2007270-021 | |
| 65.2 | | WIRING HARNESS "A" | | | 2014803 | | 2021291 | |
| 65.3 | | SIG. COND. ASS'Y C/M FLIGHT QUAL. | N/A | | 2007235-011 | | 2007235-021 | GEN 202 & 204 |
| 65.4 | | HEADER ASS'Y SIG. COND. FLIGHT QUAL. | N/A | | 2007271-011 | | 2007271-021 | |
| 65.5 | | WIRING HARNESS "A" | N/A | ECP 623 | 2014802 | 8102731 | 2021289 | |
| 66.0 | ADD ALUM. FOIL TAPE | SIG. COND. ASS'Y LEM FLIGHT QUAL. | N/A | ECP 624 | 6007010-011 | 8102749 | 6007010-021 | GEN 602, 603, 605 & 606 |
| 66.1 | | HEADER ASS'Y SIG. COND. LEM FLIGHT QUAL. | N/A | | 6007016-011 | | 6007016-021 | |
| 66.2 | | SIG. COND. ASS'Y LEM OPERATIONAL | N/A | | 6007013-011 | | 6007013-021 | GEN 607, 608, 609, 610 & 608S |
| 66.3 | | HEADER ASS'Y SIG. COND. OPERATIONAL | N/A | ECP 624 | 6007014-011 | 8102749 | 6007014-021 | |

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|--|---|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PLACE 3 PLACE DECIMALS DECIMALS ANGLES + - + - - - - - DO NOT SCALE THIS DRAWING | AC ELECTRONICS DIVISION GENERAL MOTORS CORP. BIRMINGHAM, MS 71 Conn 15 SEPT 67 CHECKED 7/25/67 APPROVAL CONTRACT | MANNED SPACECRAFT CENTER HOUSTON TEXAS MASTER RETROFIT KIT LIST APOLLO G & N (ACELECTRONICS) |
| MATERIAL APPROVAL | NASA APPROVAL <u>A.C. METZGER</u> CEB MIL APPROVAL <u>E. AUSTIN</u> | SIZE D CODE IDENT NO 99974 SHEET 8 OF 8 |

1021200

- NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327.
 2. REFER TO WIRING SCHEMATIC, NASA DRAWING NO. 2012391.
 3. TWIST CONDUCTORS IN ACCORDANCE WITH ND1002032.
 4. APPLY ITEM (10) AND (11) TO LEADS.
 5. TERMINATE SHIELDED WIRES, USING ITEM (17), IN ACCORDANCE WITH ND1002071.
 6. E1 POINT TO BE A SPLICE, USING ITEM (20), IN ACCORDANCE WITH ND1002032.
 7. APPLY APPROPRIATE LOCATION OF E-POINT SHOWN ON HARNESS.
 8. SOLDER CONDUCTORS IN ACCORDANCE WITH ND1002071.
 9. LACE CONDUCTORS IN ACCORDANCE WITH ND1002032.
 10. PERFORM CONTINUITY CHECK.
 11. PLACE ITEM (18) OVER CONTACTS AND LEADS AND SHRINK.
 12. SHRINK ITEM (18) AND IDENTIFY ASSEMBLY USING NASA DWS NO., REVISION LETTER AND MANUFACTURING SYMBOL IN ACCORDANCE WITH ND1002019.
 13. USE TYPE II (FLEXIBLE).
 14. IN ACCORDANCE WITH ND1002440.
 15. POTTING SHALL NOT INTERFERE WITH POLARITY SCREW OPERATION.
 16. POTTING SHALL COVER WIRE INSULATION FOR A MINIMUM OF .12 INCH.
 17. MARK REFERENCE DESIGNATIONS .12 INCH HIGH IN ACCORDANCE WITH ND1002019.
 18. FOR WIRING LEGEND SEE SHEET 2 OF 2.
 19. ITEMS 12 AND 13 ARE A MATCHED PAIR (REFER TO DWS 2007023).
 20. 2007023 IS A MATCHED PAIR TO ITEM 11 USING GRADE "E" OF MIL-D-22475 IN ACCORDANCE WITH ND1002211.



| SYM | QTY | DESCRIPTION | DATE | APPROVAL |
|-----|-----|------------------------|---------|----------|
| A | | REVISED PER TORR. 1552 | 1/15/52 | W.C. |
| B | | REVISED PER TORR. 1552 | 1/15/52 | W.C. |
| C | | REVISED PER TORR. 1552 | 1/15/52 | W.C. |

| | | | |
|----|----|--------------------------|--|
| 24 | 1 | 1010708-5 | WIRE MODIFIED, INSULATED, SOLID COPPER (E16) |
| 23 | 1 | 1010416-7 | WIRE, ELECTRICAL, STRANDED, INSULATED |
| 22 | 1 | 1010416-5 | WIRE, ELECTRICAL, STRANDED, INSULATED |
| 21 | 3 | 1011625-28 74455151028 | SCREW CAP HEX, SOC HD, SELF-LOCKING |
| 20 | 1 | 1010490-114 | INSULATION-SLEEVING, ELECT. HEAT SHRINKABLE |
| 19 | 15 | 1010480-058 | INSULATION-SLEEVING, ELECT. HEAT SHRINKABLE |
| 18 | 1 | 1010490-278 | INSULATION-SLEEVING, ELECT. HEAT SHRINKABLE |
| 17 | 8 | 1010402-1 | BLEEVE, SOLDER, ELECT. COND. INSUL. HEAT SHRINK. |
| 16 | 1 | 1010416-1 | WIRE, ELECTRICAL, STRANDED, INSULATED (12) |
| 15 | 1 | 1010416-3 | WIRE, ELECTRICAL, STRANDED, INSULATED (12) |
| 14 | 1 | 1010416-10 | WIRE, ELECTRICAL, STRANDED, INSULATED |
| 13 | 1 | 101140-2 | CONNECTOR, ELECTRICAL, RECTANGULAR |
| 12 | 1 | 2007023 | TUNING FORK ASSY TRACKER AND PHOTOMETER |
| 11 | 1 | 2007024 | HEAD ELECTRONICS ASSY (TRACKER) |
| 10 | 2 | NAS332004114 74455157013 | SCREW, CAP, HEX, SOC HD, SELF-LOCKING |
| 9 | 1 | 2012483 8538691000 | PHOTOMULTIPLIER HOUSING AND LENS ASSY (ST) |
| 8 | 1 | 1012154 64258000901 | RESONATOR, TUNING FORK ASSY OF (TRACKER) |
| 7 | 1 | 2007025 | HEAD, ELECTRONICS ASSEMBLY (PHOTOMETER) |
| 6 | 3 | NAS332004114 74455157013 | SCREW, CAP, HEX, SOC HD, SELF-LOCKING |
| 5 | 1 | 2012481 85386910000 | PHOTOMULTIPLIER HOUSING AND LENS ASSY (H.S.) |
| 4 | 1 | 2012518 85386911300 | RESONATOR, TUNING FORK AND FIELD ST. RANGE |
| 3 | 2 | 2012619 85386910130 | SCREW, BUTTON HEAD, MODIFIED |
| 2 | 1 | 2012506 85386911260 | BOARD, TERMINAL, ASSY OF |
| 1 | 1 | 2012516 85386911290 | HV POWER SUPPLY AND PLATE, ASSY OF |

| | | | | | |
|---------------------------------------|--|--------------------------|--|----------------|--|
| UNLESS OTHERWISE SPECIFIED | | DRAWN BY: [Signature] | | DATE: 12/15/52 | |
| DIMENSIONS ARE IN INCHES | | CHECKED BY: [Signature] | | DATE: 12/15/52 | |
| TOLERANCES UNLESS OTHERWISE SPECIFIED | | APPROVED BY: [Signature] | | DATE: 12/15/52 | |
| DO NOT SCALE THIS DRAWING | | MATERIAL | | SCALE: 2/1 | |
| 2011701 2011000 | | CONTRACT | | 2012509 | |
| APPLICATION | | SCALE: 2/1 | | SHEET 1 OF 2 | |

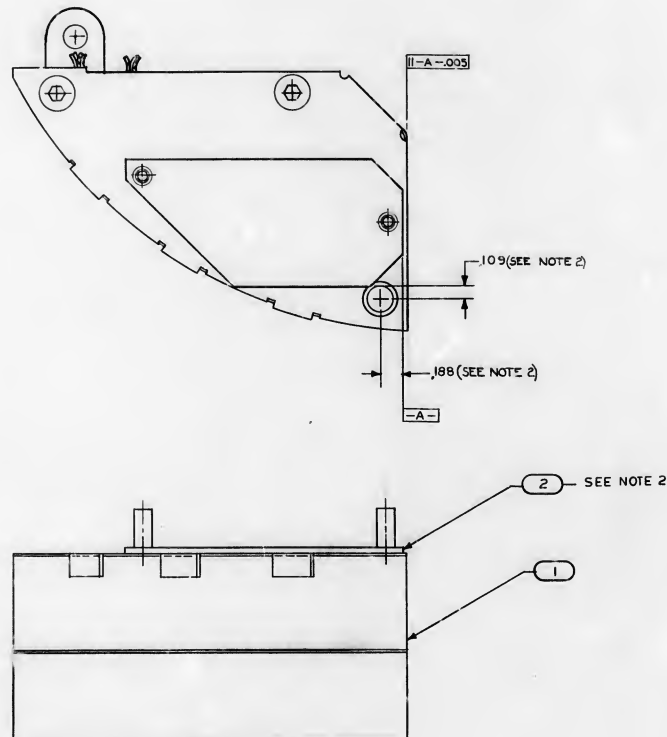
| MODULE | | TRK NO. | COND. NO. | COLOR | FROM | INTERIM PT. | TO | REMARKS |
|--|--|---------|-----------|--------|--------------|-------------|--------------|---------|
| HEAD ELECTRONICS ASSY (TRACKER) 2007024 | | 14 | E1 | WHITE | F-E1 | | TBI-A2 | |
| | | | E2 | WHITE | F-E2 | | F-E2 SHIELD | |
| | | | E1 | WHITE | F-E1 | | TBI-A1 | |
| | | 14 | | WHITE | F-E2 SHIELD | | H-E1 SHIELD | |
| | | | E3 | RED | F-E3 | | TBI-A12 | |
| REF. DESIG.-F | | | E5 | BLACK | F-E5 | | P12-D | |
| | | | E4 | WHITE | F-E4 | | P12-F | |
| | | 14 | | WHITE | F-E4 SHIELD | | A-E1 SHIELD | |
| | | | E1 | WHITE | H-E1 | | TBI-A9 | |
| | | | E2 | WHITE | H-E2 | | H-E2 SHIELD | |
| HEAD ELECTRONICS ASSY (PHOTOMETER) 2007025 | | 14 | | WHITE | H-E2 SHIELD | | TBI-B18 | |
| | | | E1 | WHITE | H-E2 SHIELD | | TBI-A2H | |
| | | | E3 | RED | H-E3 | | TBI-A14 | |
| | | | E5 | BLACK | H-E5 | | P12-T | |
| | | | E4 | WHITE | H-E4 | | P12-V | |
| REF. DESIG.-H | | | | WHITE | H-E4 SHIELD | | E1 | |
| | | | E1 | WHITE | K-E1 | | TBI-B2 | |
| | | 14 | | WHITE | K-E1 SHIELD | | K-E4 SHIELD | |
| | | | E4 | WHITE | K-E4 | | TBI-B1 | |
| | | | | WHITE | K-E4 SHIELD | | J-E1 SHIELD | |
| HV POWER SUPPLY ASSY (TRACKER) 2007032 | | | E13 | RED | K-E13 | | TBI-B12 | |
| | | | E5 | BLACK | K-E5 | | TBI-B18 | |
| | | | E11 | WHITE | K-E11 | | P12-N | |
| | | 14 | | WHITE | K-E11 SHIELD | | K-E12 SHIELD | |
| | | | E12 | WHITE | K-E12 | | P12-P | |
| REF. DESIG.-K | | 14 | | WHITE | K-E12 SHIELD | | H-E4 SHIELD | |
| | | | E1 | WHITE | J-E1 | | TBI-B9 | |
| | | 14 | | WHITE | J-E1 SHIELD | | J-E4 SHIELD | |
| | | | E4 | WHITE | J-E4 | | TBI-B8 | |
| | | 14 | | WHITE | J-E4 SHIELD | | TBI-B8 | |
| HV POWER SUPPLY ASSY (PHOTOMETER) 2007031 | | | E5 | BLACK | J-E5 | | TBI-B7 | |
| | | | E6 | RED | J-E6 | | TBI-B12 | |
| | | 14 | | WHITE | TBI-A2H | E1 | P12-U | |
| | | 15 | | RED | TBI-A14 | | P12-W | |
| | | 16 | | BLACK | TBI-A20 | | P12-X | |
| REF. DESIG.-J | | 22 | | YELLOW | TBI-A18 | | P12-S | |
| | | 23 | | BLUE | TBI-A19 | | P12-L | |
| | | 24 | W | BLUE | TBI-B12 | | TBI-B13 | |
| | | 24 | W | BLUE | TBI-B13 | | TBI-B14 | |
| | | 24 | W | BLUE | TBI-B22 | | TBI-B17 | |
| | | 24 | W | BLUE | TBI-B17 | | TBI-B18 | |
| | | 24 | W | BLUE | TBI-B1 | | TBI-B5 | |
| | | 24 | | BLUE | TBI-B5 | | TBI-B22 | |

* * -TO FACILITATE ASSEMBLY
INSULATION MAY BE STRIPPED FROM WIRE

| | | | | | | | |
|---|-----------|------------------|--|-----------|---|----------|---------------|
| FIG QTY | REV | DESCRIPTION/NAME | ROLLBACK PART NO. | COST UNIT | MANUFACTURE OR DESCRIPTION | MATERIAL | SPECIFICATION |
| UNLESS OTHERWISE SPECIFIED THERMALLY SET IN OVEN | | | LIST OF PARTS AND MATERIALS | | MANNED SPACECRAFT CENTER HARTMAN, ARIZ. | | |
| 1. RESISTANCE - 1000 OHMS | | | BULB/RESISTOR IDENTIFICATION NO. 80386 910070 | | | | |
| WAT | 1 | 1 | CROSS & APPROVALS | | TITLE | | |
| DO NOT SCALE THIS DRAWING | | | DESIGNER: <i>[Signature]</i> DATE: 5-15-68 | | HEAD ELECTRONICS, HARNES ASSY OF | | |
| MATERIAL | | | APPROVAL: <i>[Signature]</i> DATE: 5-15-68 | | | | |
| 201701 | 201600 | | BASIC APPROVAL: <i>[Signature]</i> | | CODE IDENT NO. SIZE MATERIAL | | |
| TEST SHEET | DESIGN ON | CONTACT | REV APPROVAL: <i>[Signature]</i> | | 80x30 1 E | | |
| APPLICATION | | | | | SHEET 2 OF 2 | | |

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327.
2. DATE ITEM ② FROM & OF STUD IN ITEM ① AND BOND ITEM ②.
3. ITEM ① AS SHOWN IN ACCORDANCE WITH NO 1000004, TYPE II.
3. IDENTIFY USING NASA DRAWING NO., REVISION LETTER AND MANUFACTURERS SYMBOL PER ND1002019 (TAGGING)



| | | | | | | | | | |
|----------|----------|-----|---------------------|-------------------|------------|---|----------|---------------|---------|
| 2 | 1 | | 2012505 | 85386911250 | | PLATE, STAND-OFF ASSEMBLY OF | | | |
| 1 | 1 | | 2007030 | | | HV POWER SUPPLY PHOTOMETER-TRACKER ASSY | | | |
| ITEM NO. | QTY REQD | SYM | GOVERNMENT/NASA NO. | ROLLSMAN PART NO. | CODE IDENT | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | UNIT WT |

LIST OF PARTS AND MATERIALS

| | | | | | |
|--|---------|--|---|---|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | | ROLLSMAN INSTRUMENT CORPORATION EL PASO, TEXAS P/N 85386911290 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| TOL. | ON | 2.010 | 2 | TITLE HV POWER SUPPLY AND PLATE, ASSY OF | |
| DO NOT SCALE THIS DRAWING | | DRAWN E. DRAPEL DATE 2-15-65 CHECKED BY G. J. JONES 2-15-65 APPROVAL E. DRAPEL 2-15-65 | | CODE IDENT NO. 80230 SIZE D NABA NUMBER 2012516 | |
| MATERIAL | | NABA APPROVAL E. DRAPEL 2-15-65 MIT APPROVAL W. J. JONES 2-15-65 | | SCALE 2/1 WEIGHT CALC ACTUAL SHEET 1 OF 1 | |
| 2012509 | 2011000 | APPLICATION | | | |
| NEXT ASSY | USED ON | CONTRACT | | | |

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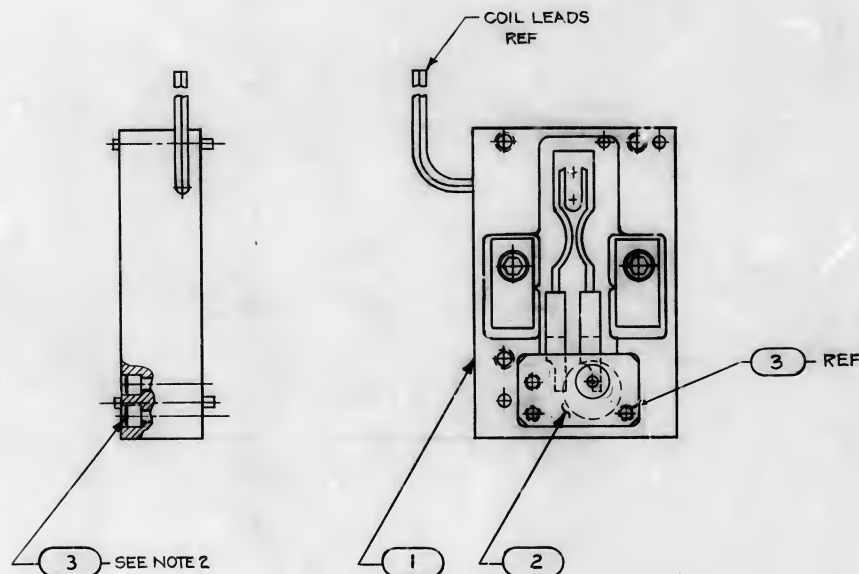
NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327.
2. VIBRATION PROOF ITEM 3 TO ITEM 2 USING GRADE "HY" OF MIL-S-22473 IN ACCORDANCE WITH ND1002211.
3. IDENTIFY USING NASA DWG. NO., REVISION LETTER AND MANUFACTURER'S SYMBOL PER ND1002019 (BAGGING).

2012518

REVISIONS 16877

| SYM | ZONE | DESCRIPTION | DATE | APPROVAL |
|-----|------|------------------------|--------|----------|
| A | | REVISED PER TDRR 19847 | 6/6/65 | WH |



*PURCHASE ITEM-SEE SPECIFICATION
CONTROL DWG BEFORE ORDERING

| | | | | | |
|---|---|---|---------|-------------|--|
| 3 | 3 | * | 2012532 | 48386910160 | SCREW, CAP, SOC. HD., SELF LOCKING |
| 2 | 1 | | 2012195 | 85386911220 | FIELD STOP, ASSEMBLY |
| 1 | 1 | * | 1012155 | 68258001001 | RESONATOR, TUNING FORK, ASSY OF (PHOTOMETER) |

| ITEM NO. | QTY REQD | SYM | GOVERNMENT/NASA NO. | KOLLSMAN PART NO. | CODE IDENT | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | UNIT WT |
|----------|----------|-----|---------------------|-------------------|------------|-----------------------------|----------|---------------|---------|
|----------|----------|-----|---------------------|-------------------|------------|-----------------------------|----------|---------------|---------|

LIST OF PARTS AND MATERIALS

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|--|--|--|---|--|--|--|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOL ON FRACTIONS DECIMALS ANGLES + - + - + - DO NOT SCALE THIS DRAWING MATERIAL 2012509 2011000 NEXT ASSY USED ON CONTRACT APPLICATION | | | KOLLSMAN INSTRUMENT CORPORATION ELMHURST NEW YORK KIC PN 85386911300 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| | | | DRAWN E. DRAPALA DATE 2-10-65 CHECKED J. SULLIVAN 2-17-65 APPROVAL [Signature] 2-11-65 APPROVAL [Signature] 2-25-65 NASA APPROVAL [Signature] 2-15-65 MIT APPROVAL [Signature] 2-15-65 | | TITLE RESONATOR, TUNING FORK AND FIELD STOP, ASSY OF | |
| | | | CODE IDENT NO. 80230 SIZE C SCALE 2/1 | | NASA NUMBER 2012518 WEIGHT CALC ACTUAL SHEET 1 OF 1 | |

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NOTES

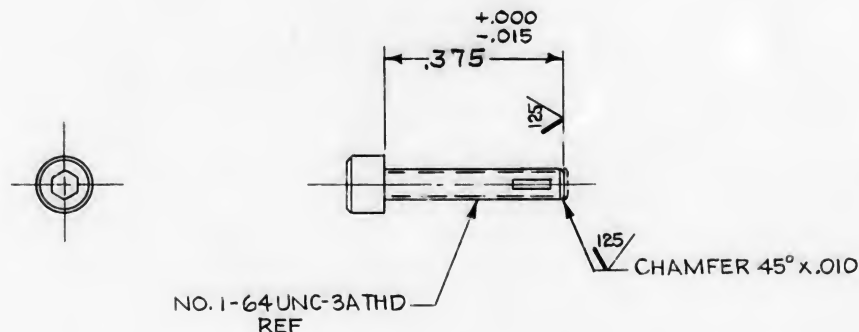
- 1) INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327.
- 2) GENERAL MACHINING STANDARDS IN ACCORDANCE WITH ND1002078.
- 3) REMOVE BURRS IN ACCORDANCE WITH ND1002019.
- 4) IDENTIFY USING NASA DWG. NO., REVISION LETTER & MANUFACTURER'S SYMBOL PER ND1002019 (BAGGING).

2012532

REVISIONS

16877

| SYM | DESCRIPTION | DATE | APPROVAL |
|-----|-------------|------|----------|
| | | | |



| ITEM NO. | QTY REQD | SYM | GOVERNMENT / NASA NO. | KOLLSMAN PART NO. | CODE IDENT | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | U |
|----------|----------|-----|-----------------------|-------------------|------------|-----------------------------|----------|---------------|---|
|----------|----------|-----|-----------------------|-------------------|------------|-----------------------------|----------|---------------|---|

LIST OF PARTS AND MATERIALS

| | | | | | | | | | | | |
|-------------|---------|--|---------------------|--------------------|--|---|---|--|--------|----------------|------|
| | | UNLESS OTHERWISE SPECIFIED | | | KOLLSMAN INSTRUMENT CORPORATION ELMHURST NEW YORK | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | | | | |
| | | DIMENSIONS ARE IN INCHES | | | KIC PN 48386910160 | | TITLE SCREW, CAP, SOCKET HEAD SELF LOCKING | | | | |
| | | TOL ON | FRACTIONS + - | DECIMALS - .005 | ANGLES + 1° | DRAWN <u>A.C.WILLIAMS</u> DATE <u>2-12-65</u> | | | | | |
| | | DO NOT SCALE THIS DRAWING | | | CHECKED <u>J.SULLIVAN</u> <u>2-12-65</u> | | | | | | |
| | | MATERIAL <u>NAS 1352 COILL 6</u> <u>74455157004</u> | | | APPROVAL <u>[Signature]</u> <u>2-15-65</u> | | | | | | |
| | | REF. CORROSION RESISTANT STEEL | | | APPROVAL <u>E. Abouy</u> <u>2-25-65</u> | | | | | | |
| | | | | | NASA APPROVAL <u>[Signature]</u> <u>3-11-65</u> | | CODE IDENT NO. | | SIZE | NASA NUMBER | |
| | | | | | | | | | B | 2012532 | |
| 2012518 | 2011000 | | | | MIT APPROVAL <u>[Signature]</u> <u>2-26-65</u> | | SCALE 4/1 | | WEIGHT | CALC ACTUAL | |
| NEXT ASSY | USED ON | CONTRACT | | | | | | | | SHEET 1 | OF 1 |
| APPLICATION | | | | | | | | | | | |

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NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH MIL-D-70327.

2. GENERAL MACHINING STANDARDS IN ACCORDANCE WITH ND1002078.

3. UNLESS OTHERWISE SPECIFIED:

63/ FINISH ALL OVER

4. REMOVE BURRS IN ACCORDANCE WITH ND1002079.

5. ANODIZE (SULFURIC) INSIDE SURFACES ONLY (HOLES OPTIONAL)

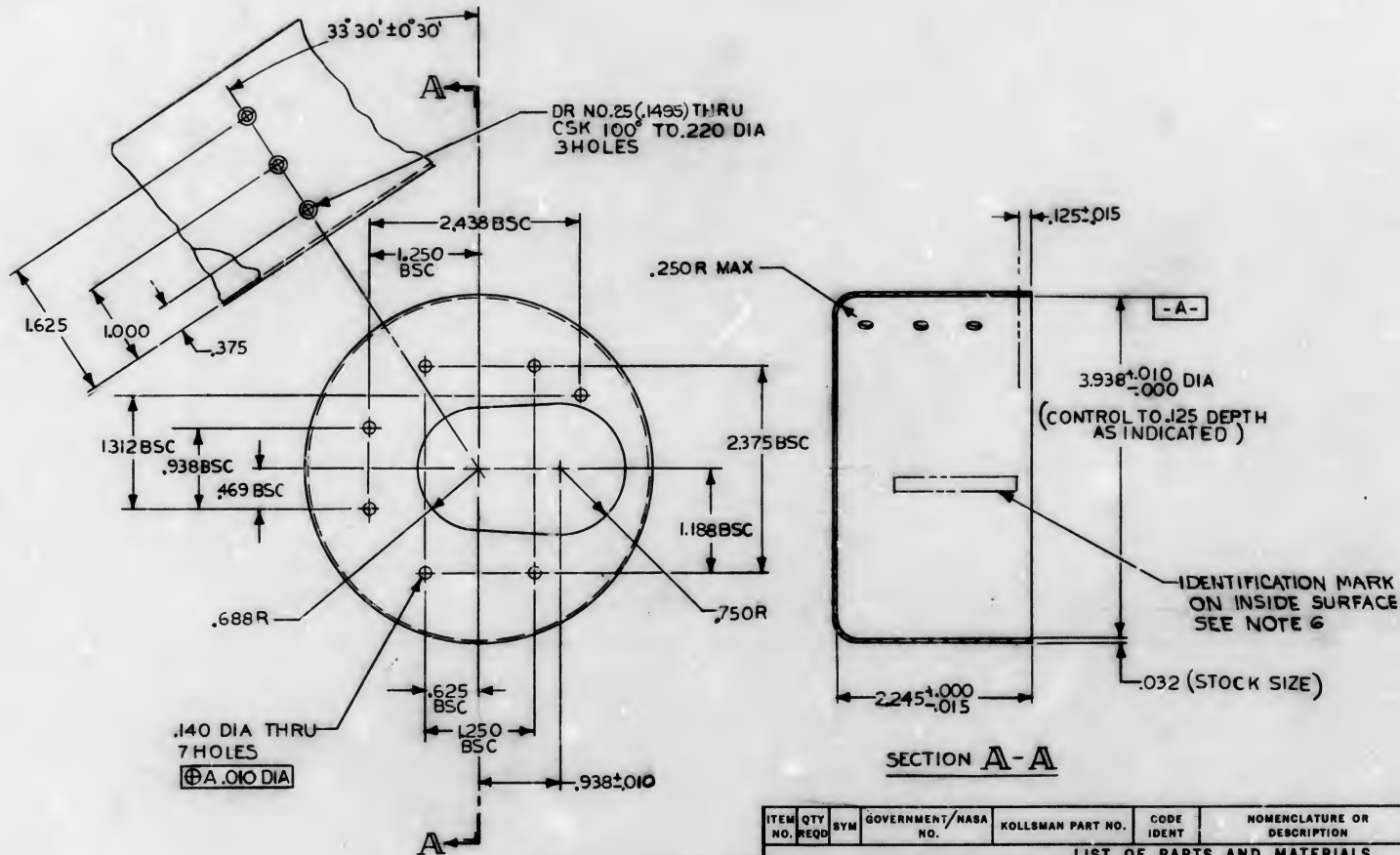
PER MIL-A-8625 TYPE II DYED BLACK (KPS-1005A.150 TYPE II CLASS 3).

6. IDENTIFY USING NASA DWG NO., REVISION LETTER & MANUFACTURER'S SYMBOL PER ND1002019.

2012545

REVISIONS TO 18584

| SYM | ZONE | DESCRIPTION | DATE | APPROVAL |
|-----|------|------------------------|----------|----------|
| A | | REVISED PER TDRR 23070 | 10/16/65 | W/H |



SECTION A-A

| ITEM NO. | QTY REQD | SYM | GOVERNMENT/NASA NO. | KOLLSMAN PART NO. | CODE IDENT | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | UNIT WT |
|--|----------|-----|---------------------|-------------------|------------|--|----------|---------------|---------|
| LIST OF PARTS AND MATERIALS | | | | | | | | | |
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | | | | | | KOLLSMAN INSTRUMENT CORPORATION ELMHURST NEW YORK | | | |
| TOL ON | | | | | | KIC PH 50386910130 | | | |
| FRACTIONS DECIMALS ANGLES | | | | | | DRAWN 5-0-65 DATE 3-1-68 | | | |
| DO NOT SCALE THIS DRAWING | | | | | | CHECKED J. SULLIVAN 4-25-68 | | | |
| MATERIAL | | | | | | APPROVED 3/23/65 | | | |
| ALUMINUM ALLOY | | | | | | APPROVAL 4/25/65 | | | |
| FED SPEC QQ-A-250/B | | | | | | NASA APPROVAL 4/25/65 | | | |
| TEMPER O | | | | | | MIT APPROVAL 4/25/65 | | | |
| CONTRACT | | | | | | TITLE | | | |
| APPLICATION | | | | | | COVER, TELESCOPE HEAD | | | |
| 2012547 2011000 | | | | | | CODE IDENT NO. SIZE NASA NUMBER | | | |
| NEXT ASSY USED ON | | | | | | 80230 C 2012545 | | | |
| | | | | | | SCALE 1/1 WEIGHT CALC ACTUAL SHEET 1 OF 1 | | | |

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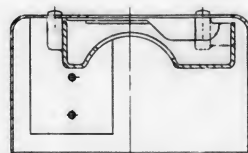
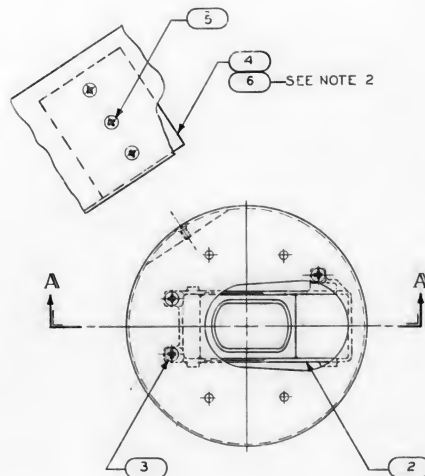
2

1

X

NOTES:

1. INTERPRET DWG IN ACCORDANCE WITH MIL-D-70327.
2. CEMENT ITEM 4 TO ITEM 1 USING ADHESIVE (ITEM 6) PER ND1002219.
3. IDENTIFY USING NASA DWG NO., REVISION LETTER AND MANUFACTURERS SYMBOL PER ND1002019 (TAGGING).



SECTION A-A

* PURCHASE ITEM - SEE SPECIFICATION
CONTROL DWG BEFORE ORDERING

| ITEM NO. | QTY | SYM | GOVERNMENT/NASA NO. | ROLLSMAN PART NO. | CODE IDENT | NOMENCLATURE OR DESCRIPTION | MATERIAL | SPECIFICATION | UNIT WT |
|----------|-----|-----|---------------------|-------------------|------------|--|----------|---------------|---------|
| 6 | 1 | * | 1011541 | 74471435001 | | ADHESIVE, EPOXY | | | |
| 5 | 3 | | NAS1189C04P4L | 74455155008 | | SCREW, SELF LOCKING 100° FLAT HEAD | | | |
| 4 | 1 | | 2012137 | 57366911230 | | COUNTER WEIGHT | | | |
| 3 | 3 | | NAS1150C04P4L | | | SCREW, SELF-LKG PAN HEAD FULL THD 50° F. | | | |
| 2 | 1 | | 2012508 | 52386910960 | | BAFFLE, DOVE PRISM, SCT | | | |
| 1 | 1 | | 2012545 | 50386910130 | | COVER, TELESCOPE HEAD | | | |

LIST OF PARTS AND MATERIALS

| | | | | | | |
|--|-----------|----------------------------|--|--|---|--------------|
| UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES | | | ROLLSMAN INSTRUMENT CORPORATION ELMHURST, NEW YORK FIG. PH 85386911330 | | MANNED SPACECRAFT CENTER HOUSTON, TEXAS | |
| TOL | FRACTIONS | DECIMALS | ANGLES | DRAWN: E. D. P. A. S. A. DATE: 3-23-65 | | |
| DO NOT SCALE THIS DRAWING | | | CHECKED: J. SULLIVAN 3-23-65 | | TITLE COVER AND BAFFLE, ASSY OF (SCT) | |
| MATERIAL | | | APPROVED: E. D. P. A. S. A. 3-23-65 | | APPROVAL: E. D. P. A. S. A. 3-23-65 | |
| 2011000 | 2011000 | NASA APPROVAL: [Signature] | | CODE IDENT NO. | SIZE | NASA NUMBER |
| NEXT ASSY | USED ON | CONTRACT | | 80230 | D | 2012547 |
| APPLICATION | | | MIT APPROVAL: [Signature] | | SCALE 1/1 | WEIGHT |
| | | | | | CALC | SHEET 1 OF 1 |